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NAVAL POSTGRADUATE SCHOOL

Monterey, California



THESIS

**BUSINESS PROCESS REDESIGN IN MARINE CORPS
RECRUITING WITH VISUAL MODELING AND
SIMULATION**

by

David G. DiEugenio, Jr.

September 2001

Thesis Advisor:

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**BUSINESS PROCESS REDESIGN IN MARINE CORPS RECRUITING WITH
VISUAL MODELING AND SIMULATION**

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B.S., United States Naval Academy, 1988

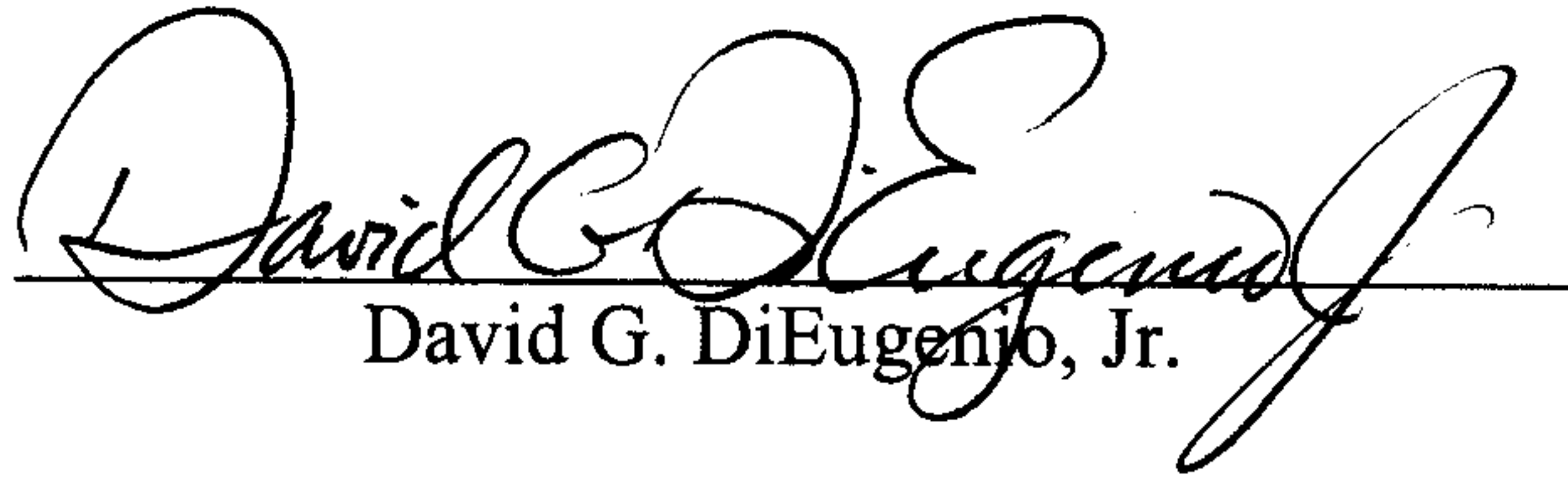
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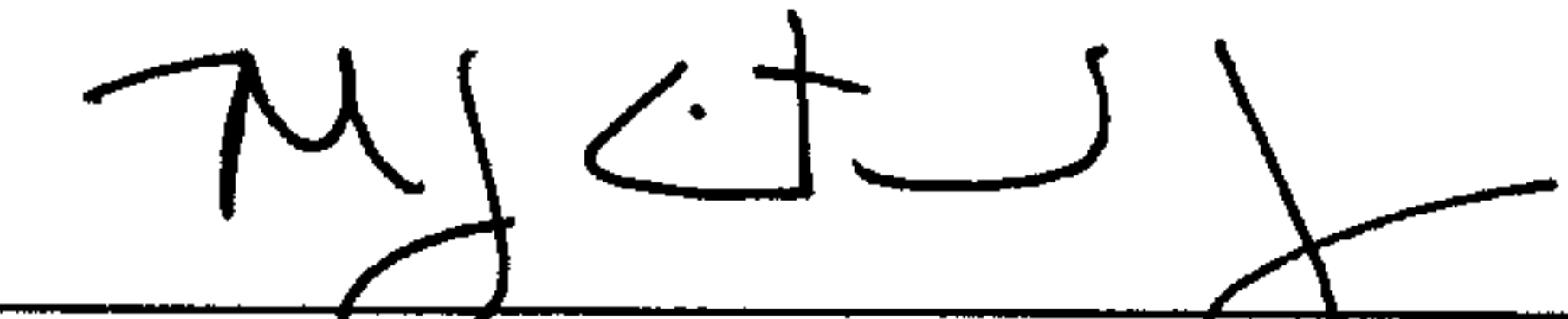
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The goal of the thesis is to identify information flow tasks in the current Marine Corps enlisted recruiting system presenting an opportunity for gains in efficiency through the application of information technology. This thesis presents an overview of the recruiting process, including the mission, target market, players, and business rules. The recruiting business model is decomposed into its components, and information flow through each component is further examined. Graphic models are created using Extend™ visual modeling and simulation software to establish a direct labor cost-per-task measure for the current or "As Is" system. "As Is" data are generated and recorded for each of the information flow tasks to be evaluated. Considering applications of information technology that may improve information flow tasks, future or "To Be" models are applied to the respective tasks and data are collected and recorded. Cost-per-task data for the "As Is" and "To Be" models are compared, and potential efficiencies gained are noted. The results of the comparison show that significant gains in efficiency are possible by applying information technology solutions to reduce redundant data entry and other burdensome administrative tasks.

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The ability to draw upon the experience of experts across the Marine Corps Recruiting Command provided a wealth of insight and assistance. Major General Gary L. Parks', USMC, Commanding General, MCRC, willingness to devote time to an interview and candidly discuss his vision of the future was invaluable. Major Mike Asmus, USMC, MCRC Director of Information Strategy, and Master Sergeant Brenda Wolfe, USMC, Marine Corps Recruiting Information Support System Operation Chief, freely and openly provided access and insight into the information systems currently in use as well those under development. Major Asmus' willingness to afford me the opportunity to participate in the requirements determination conference for the Automated Enlistment Package not only provided tremendous insight into the application, but also presented an assembled panel of career recruiters who readily offered opinions on a variety of pertinent subjects and assisted in gathering data for the models created.

Master Gunnery Sergeant Mark Holman, Chief of the 4th District Contact Team, provided detailed interpretation and assistance in developing the recruiting business model and in gathering data applied to the visual models used to assess information flow in recruiting.

I am forever indebted to Master Gunnery Sergeant Holman, the officers, and team of recruiters with whom I served with at Recruiting Station Baltimore from 1992 through 1995. Their willingness to train, educate, and share experiences created an unparalleled opportunity for personal and professional growth.

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present value, and payback analysis greatly assisted the research and information presented.

Finally, the love and support of my wife and son throughout this process provided a continuous reservoir of strength and perseverance from which I drew upon daily.

Semper Fidelis.

I. INTRODUCTION

A. BACKGROUND

No Service member joined the military to be a salesperson (Reich and Kozlusk, 1994, pp. 63-70). Yet, everyday, thousands of soldiers, sailors, airmen and Marines are on recruiting duty all over the country, spending countless hours selling their respective Services. Although the approaches to recruiting are flavored by each Service's respective culture, the fact remains that, since the end of the draft in 1973, our nation's All-Volunteer Force is actually an all-recruited one.

Admirals and generals have often described recruiting as the toughest job in the military outside of direct combat. Indeed, within the Department of the Navy, the Navy and Marine Corps typically pursue the recruiting task with the same aggressive tenacity and fervor employed in combat.

Throughout the Cold War period and into the Information Age, America's military has enjoyed a technological superiority that provided tremendous advantage in conflicts from Panama and Grenada, to the Persian Gulf, Somalia, Haiti, and, most recently, Kosovo. The ability to collect, process, and disseminate information about the disposition and intentions of both friendly and enemy forces has given the United States an edge in the time competitive decision-making process of conflict. The advantages of information superiority are well-documented and are the basis of much of the Navy's "IT-21" and the Department of Defense's Joint Vision 2020.

Network-centric warfare intends to leverage the flow of critical information across a mesh of interconnected nodes to deliver the combatant commander essential elements of information to commanders at a critical time and place in the battlespace (Cebrowski, 1998 pp. 28-36) . This is a natural outgrowth of our understanding of the nature of war and the potential advantages of information superiority. If executed properly, network-centric warfare promises to deliver decisive advantages in battle and ultimately save lives while conserving precious resources.

As technologies have expanded generations and advantages have been gained on the battlefield, few have been applied to the environment seen as the next most difficult. The Marine Corps has enjoyed relative success in recruiting during the 1990's, particularly the last several years. While other Services have struggled to make, their recruit contracting and shipping goals, the Marine Corps has met its mission, and it continues to succeed despite a lack of technological support. One might expect the same types of technological advances that would permit an artillery forward observer to fire an entire regiment of artillery with the push of a button to be employed as a supporting arm for the recruiter. Unfortunately, however, this is not the case.

Walk into any Marine Corps Recruiting Substation in America today, and the focal point of the recruiting effort is a wooden or metal box containing several hundred 4x6 inch index cards that have a variety of information about potential applicants, poolees (recruits who have enlisted but have not yet been sent to recruit training), and other local information. On the wall, one will find "situation maps" describing the local recruiting area, dotted with colored pins that identify the geographic sources of contracts for the current and previous fiscal year. In filing cabinets, one will find manila folders with prospecting lists annotated in pencil; and on the desk of the Marine in charge, one will see a large binder full of handwritten and tabulated records and logs of everything associated with the activities of the local recruiters and poolees. The Non-Commissioned Officer in Charge (NCOIC) will have a laptop computer intended to assist the significant administrative burden, but, in most cases, will not be connected to a network that permits efficient sharing of information.

While the vision and needs of the Department of Defense drove much of the nation's technological development during the early and middle stages of the Cold War, the commercial sector has encouraged the development of information technology during the last decade. The proliferation of technology solutions for distributing and sharing information in the corporate arena has far outpaced development of DOD systems. A variety of solutions present themselves as applicable to recruiting. Marketing, prospecting, screening, educating, training and data management all readily apply. However, the recruiting commands have either lacked the agility to seize and exploit the

potential opportunities offered by these solutions, or have remained focused on what they considered to be issues of higher priority.

B. PURPOSE

This thesis addresses the application of information technology (IT) solutions to the Marine Corps recruiting business model. The objective is to map the current business model, decompose it into manageable components, and use visual modeling and simulation software to explore the potential efficiencies gained by implementing IT solutions. Ultimately, the intent is to determine whether or not the injection of IT solutions into the process will yield improvement in the business model and offer a redesigned process.

C. SCOPE

The scope of this thesis includes the following: (1) a review of the recruiting process; (2) an in-depth decomposition and review of the components of the recruiting business model; (3) the use of visual modeling and simulation software to represent aspects of the model which lend themselves to such analysis; (4) an examination of solutions applicable to specific aspects of model components; and (5) an examination of the benefits afforded by employing an office productivity suite such as Microsoft Office. The thesis concludes with a re-examination of the recruiting business model in light of potential efficiencies and considers a redesign or realignment of the model.

The scope does not include: (1) variations in the model associated with officer recruiting; (2) the acquisition planning, programming and budgeting (the PPBS process) of potential solutions; and (3) in-depth examinations of the business models employed by other Services.

D. METHODOLOGY

The methodology used in this thesis research consists of the following.

- Conduct a thorough review of:
 - United States Marine Corps (USMC) *Volume I, Guidebook for Recruiters*
 - USMC *Volume III, Guidebook for Recruiting Station Operations*
 - DOD *Military Personnel Procurement Manual*
- Conduct a literature search of books, magazine articles, internet resources, CD-ROM systems, and other library information resources focusing on:

- Workflow and Business Process Modeling
- DOD Recruiting
- Marine Corps Recruiting
- Conduct a thorough review of the IT solutions currently employed by the Marine Corps.
- Identify the components of the recruiting business model.
- Validate the components of the recruiting business model through the Marine Corps Recruiting Command (MCRC).
- Identify the components that lend themselves to modeling and simulation.
- Build applicable models with appropriate tools.
- Collect and validate the data criteria applicable to proposed modeling and simulation.
- Run models and analyze the output.
- Consider commercially available software applications intended to provide solutions for corporate applications similar to recruiting business model components.
- Consider the previously developed recruiting business model in light of the findings of modeling and simulation experiments.
- Consider the previously developed recruiting business model in light of the proposed commercially available IT solutions.
- Re-evaluate the validity of the recruiting business model. Do IT implementations change the model? If so, how?

E. ORGANIZATION OF THE STUDY

This thesis examines information flow in the Marine Corps recruiting business process. After introducing Marine Corps recruiting, the thesis decomposes the recruiting business process into its associated components. Information flow is traced from the initial introduction of a potential applicant's name into the system through enlistment. This thesis uses Extend™, a visual modeling and simulation software, to evaluate information flow through the various components of the model. Extend™ is further explained, and a prototype is presented before discussing its application to the current, or "As Is, " model representing information flow in recruiting today. Consideration is given to current information systems in use, and an effort is made to help the reader better understand the information flow associated with recruiting a potential applicant. Further, after considering the case of an individual, the costs associated with information flow are

aggregated across the Marine Corps' recruiting force and national recruiting mission. Subsequently, potential injections of information technology (IT) are considered in an effort to develop a "To Be" business model, using IT to gain efficiency in the process. Evaluating the "To Be" Model using Extend™ offers a basis for comparison of the efficiencies gained or lost between the "As Is" and "To Be" perspectives. Finally, a summary and conclusion discuss the findings of the thesis, lessons learned, and recommendations for future research.

F. A NOTE ON LITERATURE REVIEW SOURCES

This thesis examines potential applications of information technology to the Marine Corps recruiting business process. A literature search of books, magazine articles, internet resources, CD-ROM systems, and other library information resources focusing on: workflow and business process modeling, DOD and Marine Corps recruiting and information flow in the recruiting process was conducted to gather data in support of the thesis. Applicable literature resources were considered with regard to current Marine Corps recruiting practices, recruiting information systems, business process re-engineering, and documentation regarding visual modeling and simulation software.

The Marine Corps directives and publications on recruiting contain detailed and specific information regarding current recruiting policies and practices. *Volume I, Guidebook for Recruiters*, provides a detailed description of the systematic recruiting process for the recruiter and the recruiter's supervisors. *Volume I* is essential to understanding the recruiting process at the individual recruiter level. *Volume III, Guidebook for Recruiting Station Operations*, is a detailed description of the supervision of recruiters and their immediate supervisors. It guides the recruiting station staff in the administration of the components of systematic recruiting.

Additionally, two notable articles in the *Marine Corps Gazette* (Reich and Kozlusk, 1994; and Boyd, 1994) provided interesting material on the development of the recruiting command as well as a perspective of future improvements in the system. These articles dovetail with *Volume I* to further the reader's comprehension and understanding of the recruiting process as a whole.

A literature search of the Lexis-Nexis system, Internet, and library resources produced less information than expected regarding recruiting information systems currently in place. A 1997 thesis by Carl Felton and Lloyd Hamashin titled *Evaluating Marine Corps JRISS Effectiveness: A Tranguated Quasi-Experiment* provided some information on current systems, but focused on the Joint Recruiting Information Support System (JRISS), which ultimately failed to be deployed.

Additionally, essential elements of information for this thesis were derived from personal interviews with Marine Corps Recruiting Command (MCRC) staff, including: Major General Garry L. Parks, USMC Commanding General, MCRC; Major Michael Asmus, USMC, Director of Information Strategy at MCRC; Major Mark Witzel, USMC Deputy Director of Information Strategy at MCRC; Master Sergeant Brenda Wolfe, Marine Corps Recruiting Information Support System Operations Chief; and Captain Jack East, Executive Officer, Marine Corps Recruiting Station Portland, Oregon. Master Gunnery Sergeant Mark Holman, USMC, Chief of the 4th Marine Corps District Contact Team, shared a wealth of information and experience over the course of several interviews and other correspondences.

Several articles deserve special mention. Business process re-engineering sources started with "Business Process Redesign: An Overview" (Malhotra, 1998) and "An Introduction to Workflow and Business Process Modeling" (Tanuan, 2000). These two articles introduced the process flow diagrams that assisted in developing the recruiting business model process diagrams. "The Enabling Role of EDI in Business Process Re-engineering" (Roberts, 1995) furthered the notion of process redesign and "order of magnitude improvements through process re-design." "Unlimited Possibilities" (Gross, 1996) furthered the notion of process re-design by tying it to modeling and simulation software in order to conduct "what if analysis" and evaluate prospective options.

The Extend™ Manual (Imagine That Inc., 2000) broadened the scope of the potential for modeling and simulating business processes. Working through the tutorials and examples provided insight into the applicability of the tool to the Marine Corps recruiting business model. Further, personal interviews with Professor John Osmundson, Instructor for a Seminar on Visual Modeling and Simulation at the Naval Postgraduate

School, significantly assisted the transition from paper diagrams to the applicable computerized models.

Research on the subject of customer relations management (CRM) led down several paths. Due to the Navy Recruiting Command's interest in a Siebel Systems CRM solution, an overview of the system was drawn from the Siebel website. Additionally, *Cyber Rules* (Siebel and House, 1999), provided insight into e-business methodologies. Phone conversations and emails with several Siebel representatives further defined the potential for CRM systems.

Additional CRM information was drawn from the *Journal of Management Information Systems*, (Karimi, 2001); articles in both *CIO Magazine* and the discussion forums on CRM at CIO.com (Deck, 2001) and (Blodgett, 2000) and CRM white papers published by Montgomery Research Inc. (Menconi, 2000) and (Nash, 2000). Further research on CRM and the potential return on investment (ROI) uncovered articles specifically directed at evaluating ROI for CRM systems: (See for example, Surmacz, 2000; and Maoz, 2001.)

The *Squandered Computer* (Strassman, 1997) placed emphasis on many aspects of the economic benefits of information technology systems. Of the benefits discussed, alignment with core competencies and strategic vision, and return on investment were most applicable to this thesis. Porter (2000) furthers these points in his article on marrying strategy and operational effectiveness.

Managing Change (Jick, 1993), although somewhat older, presented extremely valid points concerning the issues facing an organization implementing large-scale change. Gladstone (1991), presented an equally valuable perspective on the adoption of widespread technological change to an organization rooted in culture and practice.

These sources provided a variety of perspectives and information essential to the understanding of the recruiting process, business process re-engineering, visual modeling and simulation, customer relations management, and managing change.

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II. OVERVIEW OF RECRUITING

A. INTRODUCTION

This chapter provides an overview of Marine Corps recruiting as it exists today. It attempts to establish a base of knowledge regarding the mission and structure of the recruiting force, and the process of recruiting.

B. THE RECRUITING FORCE

1. Command Structure



Figure 1. Marine Corps Recruiting Command Organization Chart
"From MCRC Website"

As seen in Figure 1, the Commanding General (CG), Marine Corps Recruiting Command (MCRC), a major general, is responsible for reporting to the Commandant of the Marine Corps (CMC) on all matters associated with recruiting and recruit training. MCRC is located in Quantico, Virginia. The national recruiting force is split into two regions, Eastern Recruiting Region (ERR) and Western Recruiting Region (WRR). Both regions are commanded by brigadier generals who supervise the recruiting and recruit training in their respective regions and report directly to the CG, MCRC. ERR is

headquartered at Marine Corps Recruit Training Depot (MCRD) Parris Island, South Carolina, and WRR is headquartered at MCRD San Diego, California. Each region is divided into three Marine Corps Districts (MCDs), each commanded by a colonel. The districts are further divided into recruiting stations (RSs), commanded by a major, and are the last level of structure commanded by a commissioned officer. There are currently 48 recruiting stations across the nation. A recruiting station is typically comprised of smaller geographical areas centered on recruiting sub-stations (RSS). The RSS is the base from which the vast majority of recruiting takes place. A senior Marine recruiter, (often a Military Occupational Specialty (MOS) Code 8412, Career Recruiter) supervises the efforts of the recruiters in his or her charge and reports directly to the RS Commanding Officer. By applying the tenets of systematic recruiting outlined in *Volume I, Guidebook for Recruiters*, recruiters pursue their assigned missions.

2. Recruiting Personnel

The Marines who make up the Corps' recruiting force are selected through a competitive process designed to identify those who possess the communications skills and character traits most desirable in a young man or woman who will represent the Marine Corps to the nation. Selection for recruiting duty affords a Marine the opportunity to attend Recruiters School at the Marine Corps Recruit Depot (MCRD) San Diego, California. Recruiters School is a seven week course to: "Conduct screening and entry level training for those Marines assigned to Recruiters' School, to qualify for the MOS of 8411, and assignment to Recruiting Duty (Recruiters School Website, 2000)." Master Gunnery Sergeant Christian McMillain, Chief Instructor of the Recruiters School has stated, "Marines from a wide spectrum of specialties attend the course and are trained and evaluated on a variety of communication skills focused subjects ranging from one-on-one interviews, telephone techniques, and audience lecture presentations. The goal is to provide the Marine Corps with a highly trained and motivated recruiter who will be the most direct representation of all the Marine Corps embodies in hundreds of locations across the nation."

Major General Parks, Commanding General of the Recruiting Command commented, "The Marine Corps' focus on rigorously screening, training and subsequently rewarding its recruiters has helped further the recruiting successes of the last decade."

Recruiters arrive in cities and towns large and small with the added weight of knowing that most local citizens have little exposure to Marines, and the recruiters represent the reputation of all those who have worn the uniform before them. This added responsibility bolsters a Marine's concept of duty and purpose, augmenting the skills and training received at Recruiters School

The senior recruiting personnel are typically career recruiters who have demonstrated extraordinary proficiency as both a recruiter and as a supervisor of recruiters. Career recruiters return to Recruiters School to attend the Career Recruiters Course and receive formal training in the responsibilities and duties of a career recruiter. Once designated a career recruiter (MOS 8412), Marines are typically assigned to larger Recruiting Substations (RSS), where they will supervise from four to six recruiters throughout a specified geographical area.

3. Recruiting Tools

Marine recruiters employ a process called systematic recruiting. Systematic recruiting is a detailed and specific methodology for ensuring contact with as many potential applicants as possible in a given geographic area. The tools employed by recruiters are prescribed in *Volume I, Guidebook for Recruiters*, and are intended to organize information in a manner that helps plan and distribute the workload as efficiently as a manual process permits.

The primary information tool in systematic recruiting is the working file. The working file is a manually maintained database of four-by-six inch index cards containing pertinent information about potential applicants, local schools, current enlistees, and other aspects of the local environment. Cards in the working file are organized by action date, and filed from front to rear chronologically. Maintaining the cards in such a detailed and organized fashion ensures the orderly and systematic contact of as many potential applicants as possible.

The working file contains a variety of cards intended to convey important information to the recruiter. The Prospective Applicant Card (PAC), which contains personal information about a particular applicant, his or her basic qualifications, and the contact history between a recruiter and the potential applicant, is the most common. Pool

cards are stapled to PACs when an applicant enlists into the Delayed Entry Program (DEP), and are intended to assist the recruiter in tracking the applicant's progress and screening prior to being shipped to recruit training. List scheduling cards reference particular high school prospecting lists and are placed in the working file to distribute the workload and ensure coverage of all the schools in a recruiter's area of responsibility. Contact cards assist recruiters in maintaining contact with people in the local area who are capable of assisting the recruiting mission. These cards and others are intended to represent the information recruiters need to successfully work their area.

Recruiters carry a Schedule and Results (S&R) book as a personal organization tool. The S&R book is organized to present the recruiter with pertinent information regarding his or her current day, week or month's appointments, and schedules. Lists of phone numbers, contacts, policy statements, and other useful documentation are also organized for quick reference. Additionally, worksheets included in the S&R book assist the recruiter in tracking and tabulating his or her prospecting objectives and achievements. These tools are used in conjunction with the procedures prescribed in *Volume I, Guidebook for Recruiters*, in pursuit of the recruiting mission.

C. THE RECRUITING MISSION

The mission of the Marine recruiting force is to recruit quality young men and women to serve their country as United States Marines and Marine officers and to perform other tasks as directed by the Commandant of the Marine Corps (MCRC Website, 2000) . This mission is attained by the successful application of the guidelines and principles outlined in *Volume I, Guidebook for Recruiters* and *Volume III, Guidebook for Recruiting Station Operations*. Both manuals provide the recruiting force with the foundation for success on recruiting duty.

The recruiting mission is comprised of two parts, the contracting mission and the shipping mission. Although not intuitively obvious, it is the shipping mission rather than contracting that dictates success or failure. Most applicants enlist in the DEP, which allows them to delay entering active duty for up to one year. Because there are a multitude of factors that may prevent an applicant from fulfilling his or her obligation, the volume of enlistees who ship to recruit training is always less than the volume who

contract. Given that the volume shipped is the factor directly affecting manpower resources and end-strength, it must receive the greatest emphasis in attaining the mission.

1. The Target Market

The recruiter's target market includes high school graduates who have above average scores on the enlistment test, are healthy and morally fit, and are US citizens between the ages of 17 and 21 years. This market population has declined in size during the 1980's and 1990's, and is only now increasing as the sons and daughters of "baby boomers" come of military age. (Reich and Kozlusk, 1994, pp.63-70). Competition in this market has increased over the same time period with a strong economy and increases in the number of high school students going to college. In addition to these factors, studies by the Defense Manpower Data Center indicate the attitudes of the target market have consistently become less positive regarding military service. Recognizing the competition among colleges, civilian employers and the Services, the role of the recruiter as an individual and that of the recruiting force as a whole has become the most critical element in the Marine Corps' ability to meet its manpower goals of the future.

2. The Business Rules

The business rules associated with recruiting are unique. The Navy and Marine Corps openly discriminate against the physically and mentally handicapped, high school dropouts, persons with criminal records, those with low enlistment exam scores, and otherwise unqualified members of society (MPPM, 1997). The pursuit of quality applicants narrows the already shallow pool of the target market. Generally speaking, an applicant should have completed or be in the process of completing high school, be deemed mentally and physically fit for service and not have any moral or legal encumbrance that may be deemed prejudicial to the good order and discipline of the service. The above general statement is further discussed in the *Military Personnel Procurement Manual* (MPPM). The MPPM goes into great detail regarding the qualifications and criteria for enlistment into the Armed Forces of the United States. The Department of Defense and Marine Corps may further restrict enlistment to applicants who meet additional unique qualifications needed to perform specific duties or tasks. A complete description of the enlistment criteria is beyond the scope of this discussion.

3. The Players

The people involved in the mission of recruiting include more than the recruiter and the target market. A support staff exists to facilitate and supervise the recruiter's efforts locally, regionally, and nationally. In addition, the recruiting force must also consider the influencers who have great impact in the lives of potential applicants. Parents, siblings, peers, teachers, coaches, clergy and others may influence an applicant's decision to enlist in the Armed Forces. These people are generally called "influencers" in the jargon of recruiting.

4. The Contact-to-Contract Chain

All of these factors come together in pursuit of the recruiting mission. By systematically pursuing the target market, recruiters take the first step in initiating the contact-to-contract chain. The contact-to-contract chain is a string of events associated with the business of recruiting. Beginning with the first contact of a potential applicant by a recruiter, the chain proceeds through qualification and screening, educating and selling, gaining commitment, and the enlistment of a new recruit. It is upon this chain of events that the recruiting business model is built.

By decomposing the contact-to-contract chain, beginning with the generation of names of potential applicants and following it through the intermediate steps ultimately leading to the contracting and shipping of enlistees, we may gain a better perspective of the process as a whole. Further examination of individual components and the information flow through them may yield opportunities for the insertion of information technology solutions to gain efficiencies and speed the process. A variety of studies have been conducted to examine the benefits of changes to the current system. In each case, recommendations include reduction of administrative redundancy and improved information flow (GAO, 1997; Schank, 1986)

D. INFORMATION FLOW AND TIME MANAGEMENT

1. Information Requirements of Recruiting

The business of recruiting revolves around the ability to collect, maintain, and process information. The underlying premise of systematic recruiting is the detailed and organized processing of as many potential applicants in a given area as possible. Data are collected on applicants, recruiters, community leaders, schools, local infrastructure, as

well as unique legal issues and local customs. The information must be organized and presented in a useful way and permit the user to validate and update the information as required. This thesis primarily discusses the information flow in finding, screening, processing, and enlisting an applicant.

Information about a potential applicant enters the system, and, as the applicant is processed, additional information is collected and maintained to facilitate the recruiting process. The information includes personal data, such as home address and phone, age, education level/ability, medical history, legal issues, drug screening, and other criteria required for enlistment.

As the applicant proceeds through the components of the process, his or her information is repeatedly accessed, updated, and distributed to various cards, forms, and documents. Currently, this process requires redundant data entry, searching, and filing by hand, and is hampered by the speed and proficiency of the individual doing the manual tasks. As a result of the current system, a significant portion of a recruiter's time is devoted to burdensome administrative detail.

2. Time Management

The importance of time management in recruiting is one of the most critical concepts a recruiter takes away from recruiting school. By shifting his or her focus to productive efforts rather than supportive or nonproductive efforts, a recruiter is taught to maximize the potential productivity in a workday to contact as many potential applicants as possible.

Improving information flow can assist the recruiter's time management by giving time back to the recruiter that would otherwise be spent on repetitive administrative tasks, including data input, searching, filing, and planning.

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III. MODELING SOFTWARE AND METHODS

A. INTRODUCTION

Business processes are "a set of logically defined tasks performed to achieve a defined outcome." (Davenport and Short, 1990) Business Process Re-engineering is defined as "the critical analysis and radical redesign of existing business processes to achieve breakthrough improvements in performance measures." (Malhotra, 1998) However, one cannot easily experiment with an organization's business process on a large scale without significant risk to capital and credibility (Tanuan, 1997) The potential for breakthrough improvements in performance creates a strong desire to analyze, measure, and redesign business processes. Conducting such analysis with modeling and simulation tools affords the opportunity to quantitatively measure results while mitigating the risks associated with large-scale experimentation.

The use of visual modeling and simulation software in this thesis is intended to provide the opportunity to explore the information flow aspects of the recruiting business model from a variety of perspectives. The software tool inexpensively permits multiple iterations and "what if?" analysis to collect and represent data (Gross, 1996). The choice of a visual modeling tool is intended to permit a more intuitive understanding of the process being modeled and to assist in communicating the method to someone with little or no modeling experience.

Reasons to model and simulate include the following: 1) measurement gives an objective basis for decision-making; 2) systems that are measured are more likely to be improved; and 3) any well thought attempt to measure is superior to not measuring at all. (Extend Manual, 2000)

It is the intent of this thesis to measure the information flow in the recruiting process in hope of discovering efficiencies to be gained by injecting information technology solutions.

This chapter introduces Extend™, the modeling and simulation software employed to evaluate information flow in the recruiting business process. A problem is

presented with a prototype model designed to solve it. After decomposing the prototype model and describing its building blocks, the chapter traces the flow of one iteration through the model to assist the reader's understanding.

B. EXTEND™, VISUAL MODELING AND SIMULATION TOOL

Extend™ is an object-oriented environment for modeling, analyzing, reengineering, and documenting processes. It graphically uses icons and links to represent the building blocks of a model to facilitate communication between developers and users. Extend™ is designed to permit users to concentrate on the process being examined rather than becoming distracted by modeling methodology or complex software programs.

Extend™ permits the user to develop blocks or icons representing specific aspects of a given process. By incorporating the activities, queues, delays, and transformations that comprise business processes, a modeler can assign attributes and values to represent multifaceted problems that would otherwise be difficult to demonstrate. Linking the blocks permits processes to flow through their various stages and conditions, and permits quantitative measurements and calculations of the factors to be examined. A variety of graphing options are included to present model output in many formats. The Extend™ libraries include a diverse assortment of pre-configured blocks applicable in many scenarios. Further, Extend™ offers the ability to develop customized blocks for processes or conditions not otherwise covered in the libraries.

C. MODEL PROTOTYPE

1. The Problem

The main issue to be modeled in this application is how to represent cost-per-task. Given the information flow tasks to be modeled may be performed by recruiters of varying pay grades and may take varying amounts of time to complete, one cannot simply multiply a single hourly wage by a single time duration to generate a cost. Additionally, recruiters receive both direct and indirect monetary compensation. Therefore, some assumptions must be incorporated in the model to complete the calculations.

2. Assumptions

a. *How Many Recruiters and What Pay Grade?*

The distribution of Marine Corps recruiters by rank and pay grade is shown in Table 1. As seen here, about three-quarters of the recruiting force are sergeants and staff sergeants.

Table 1. Distribution of Rank Across the Marine Corps Recruiting Force by Rank/Pay Grade 2001

Rank/Pay Grade	% of Recruiting Force
Master Gunnery Sergeant/E-9	1
Master Sergeant/E-8	6
Gunnery Sergeant/E-7	18
Staff Sergeant/E-6	44
Sergeant/E-5	30
Corporal/E-4	2
Total	100

“From Marine Corps Recruiting Command, 2001”

To best represent the potential pay grade assignments for a particular task, we used a random number generator to select the pay grade assignment, but constrained the block to ensure that over the course of multiple runs of the simulation, the distribution would mirror the percentages shown in Table 1. As a result, any given run of the model could have any rank assigned to an individual task, but after many runs, 30 percent would be performed by Sergeants, 44 percent would be performed by Staff Sergeants, 18 percent would be performed by Gunnery Sergeants, and so on

b. *What Wage Rate?*

The next assumption develops a compensation baseline. Compensation rates for recruiters are matched against the Office of the Under Secretary of Defense (Comptroller) FY 2001 Department of Defense (DoD) Reimbursable Rates. (Defense Technical Information Center, 2001)

The Civilian Equivalency Rates shown in Table 2, are used as the benchmark for direct labor compensation. While opinions may differ regarding the compensation of recruiters on a basis of hourly wage, this rate is chosen because it is designated by the DoD Comptroller as accurately reflecting the labor cost associated with

military personnel of a given rank. The Equivalency Pay Rates are provided as an annual salary equivalent. Dividing the annual salary by the number of hours per equivalent work year yields the equivalent hourly wage.

Table 2. Office of the Under Secretary of Defense (Comptroller) FY 2001
Department of Defense (DoD) Reimbursable Rates

Civilian Equivalency Rates						
Rank/Grade	Civ Eq Rate	Hrs/Wk	Wks/Yr	Hrs/Yr	Hourly Wage	Wage/Min
E9	\$45,900.00	40	52	2080	\$ 22.07	\$ 0.37
E8	\$41,400.00	40	52	2080	\$ 19.90	\$ 0.33
E7	\$37,300.00	40	52	2080	\$ 17.93	\$ 0.30
E6	\$33,500.00	40	52	2080	\$ 16.11	\$ 0.27
E5	\$33,500.00	40	52	2080	\$ 16.11	\$ 0.27
E4	\$29,900.00	40	52	2080	\$ 14.38	\$ 0.24
E3	\$26,600.00	40	52	2080	\$ 12.79	\$ 0.21

“From Defense Technical Information Center, 2001,
<http://www.dtic.mil/comptroller/rates/>”

Undoubtedly, anyone who has ever worked on recruiting duty would likely dispute the notion of a 40-hour workweek. One could find arguments in favor of 50 to 80 hours or more per week. However, because DoD uses these rates as a means of comparing the value of both direct and indirect compensation, they are adopted for the purpose of the model. Additionally, nothing in this example should be construed as lessening the required work or effort essential to the success of the recruiting force. Using fewer hours per week increases the perceived value of the recruiters' effort.

c. How Long per Task?

Given we have a method of selecting a particular pay grade to perform a task, and we have a wage rate to charge against the time required, we need a method of determining the time required to perform a particular task. The time, geography and resources available preclude detailed observations of recruiters in the performance of their duties. Without empirically measuring recruiter's performance, a panel of experts was queried as to their opinions regarding the time required to complete information flow tasks.

Discussions were held with eight career recruiters to develop a consensus benchmark for the lengths of time associated with each information flow task. Experts were asked to consider how long a recruiter would take to complete a particular task associated with information flow in a given component. Since recruiters have a range of skills, and some tasks are likely to be interrupted, the experts were asked to identify a range with which they felt comfortable rather than assigning a specific time value.

These experts included Master Gunnery Sergeant Macmillan, USMC, Chief Instructor at the Marine Corps Recruiters' School; Master Gunnery Sergeant Holman, USMC, Chief of the 4th Marine Corps District Contact Team and former Recruiter Instructor at Recruiting Station Baltimore, Maryland; Master Sergeant Brenda Wolfe, Operations Chief, Marine Corps Recruiting Information System (MCRISS), and five other distinguished career recruiters selected for their experience, breadth, and depth of knowledge in recruiting.

Additionally, background information and the input of the career recruiters were discussed and considered with several officers assigned to recruiting duty: Major Mike Asmus, USMC, Director of Information Strategy, Marine Corps Recruiting Command and former Executive Officer of Recruiting Station Detroit Michigan; Captain Jack East, USMC, Executive Officer of Recruiting Station, Portland Oregon; and Captain Colleen Vigil, USMC Operations Officer, Marine Corps Recruiting Information System (MCRISS). Based on discussions with the experts noted above and the author's previous experience as Executive and Commanding Officer of Recruiting Station Baltimore, Maryland, the benchmarks used in the model appear valid.

The career recruiters agreed that a single average did not best represent the time it takes to perform a particular task. They cited varying degrees of proficiency among recruiters and the potential for both highly proficient and inexperienced recruiters to be delayed by interruptions and other circumstances. The Extend™ modeling tool offers a variety of statistical distributions that may be applied to scenarios. The Gamma Distribution was chosen as the best representation of the time required to complete a task. This distribution permits the representation of a small number of recruiters whose proficiencies place them faster than the mean, and another percentage of both

experienced and inexperienced recruiters who may be slower than the mean due to a variety of circumstances. An example of the gamma distribution for the prototype is shown in Figure 2.

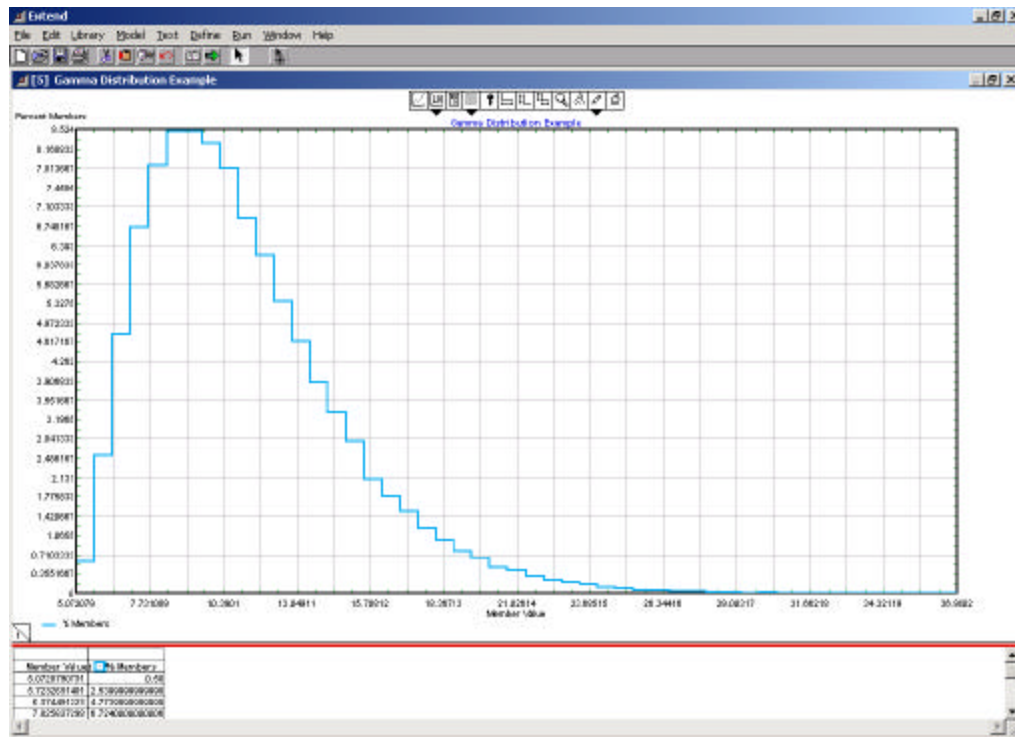


Figure 2. Gamma Distribution from Extend™
Source: Created by author using Extend™

The statistical distribution in Figure 2 illustrates a generic task in which the greatest numbers of individuals are clustered around a time of eight minutes to complete the undertaking. Some individuals are able to perform the task faster, while, as the graph indicates, a smaller percentage is delayed in completing the task by as much as 30 minutes.

Given the foundations of the problem, we now have a method of selecting a particular pay grade to perform a task, a wage rate to charge against the time required, and a distribution to represent the time required to complete a task. Therefore, we can build a prototype model to generate cost even though both wage and time may vary by iteration. Figure 3 is a prototype model created to examine the cost-per-task problem.

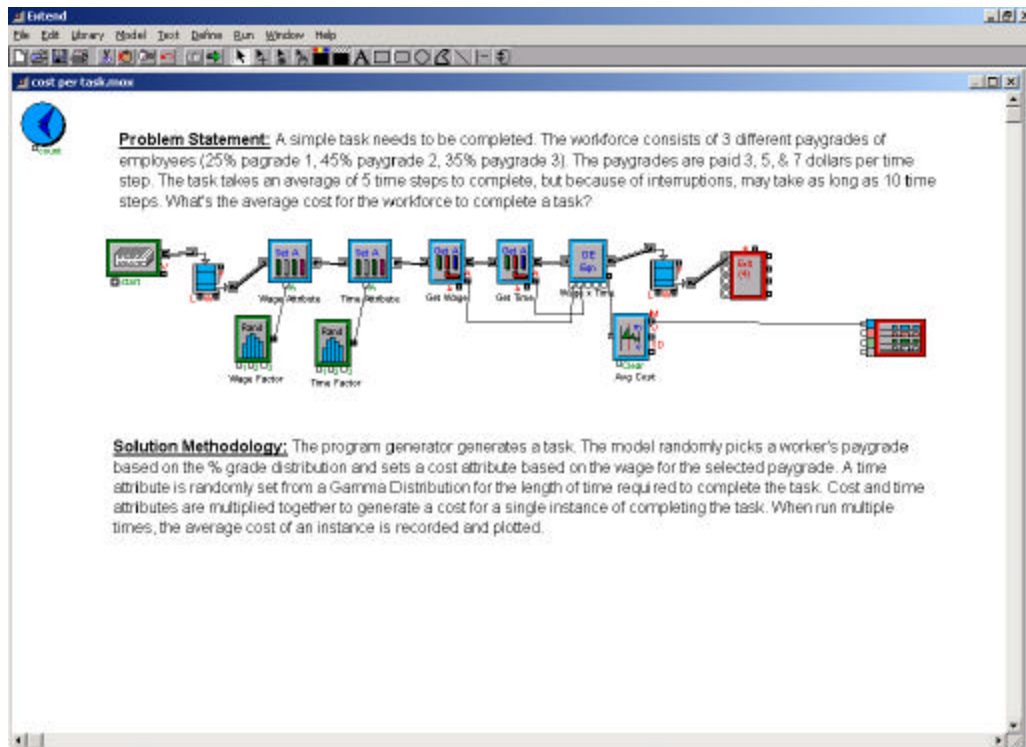


Figure 3. The Cost-Per-Task Prototype Developed in Extend™
Source: Created by author using Extend™

Given the cost-per-task problem stated above, we can model the process and test hypotheses while varying assumptions and examining output. Extend™ uses a building block method to graphically depict the components of a process. To better understand how these building blocks interact, we will examine the cost-per-task model shown in Figure 3.

The Executive Block (Figure 4) is a special block that must be included in all discrete event simulations. It acts as the timer or counter from which other blocks draw information to initiate a sequence of events. In the cost-per-task model, the Executive Block initiates a counting sequence, causing an instance of a cost-per-task to be generated. Setting the number of instances to be counted generates the total number of tasks to be measured.

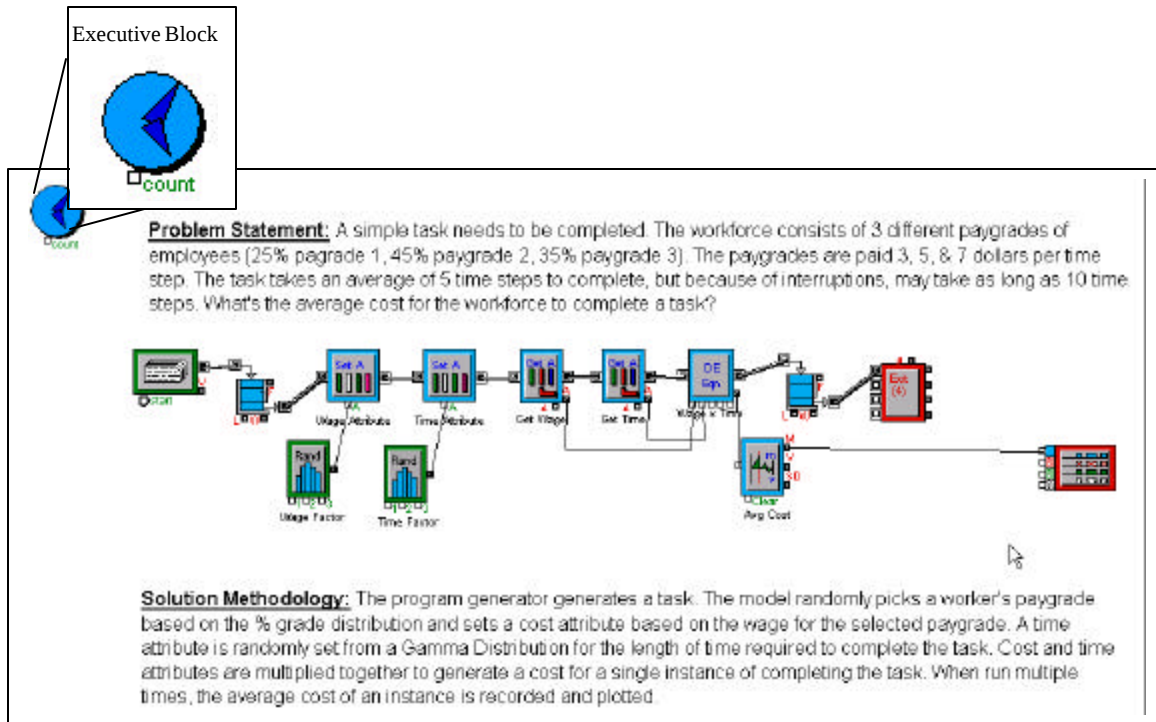


Figure 4. The Executive Block in the Extend™ Prototype
Source: Created by author using Extend™

The Program Generator shown in Figure 5 is used to generate items. In the case of this model, each item generated is a new task to be performed. The Program Generator takes its cue from the Executive Block and generates a new task each time the executive increments the count. Each task can be assigned values, priorities, or attributes according to the modeling requirements. In this model, each task is assigned a value and priority of one (1) by default.

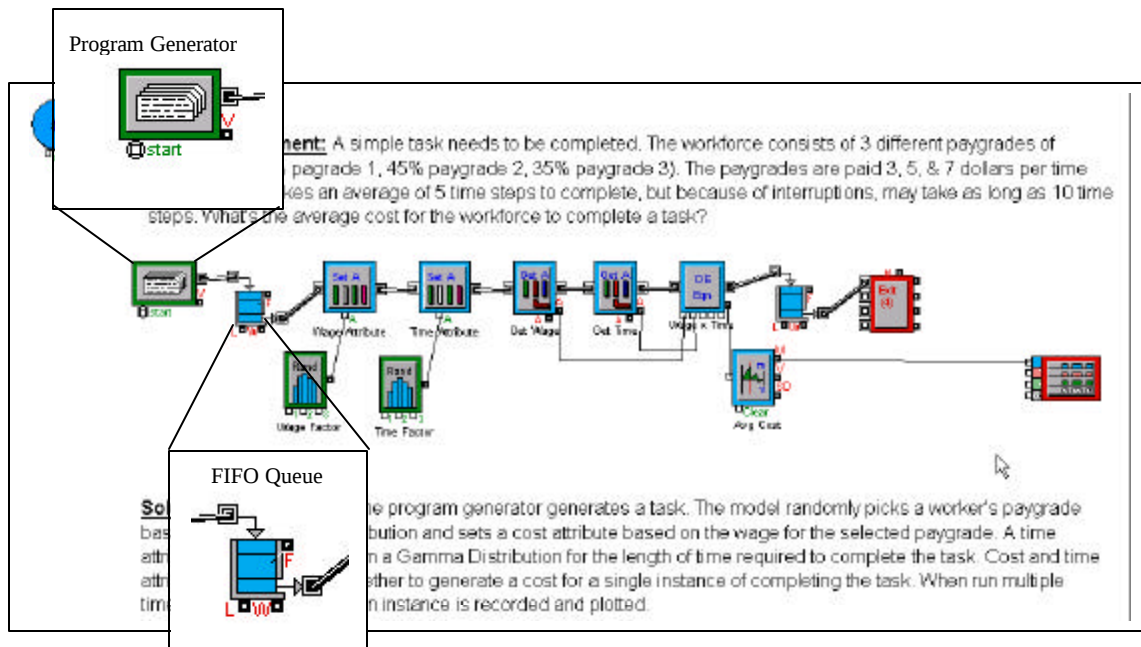


Figure 5. The Program Generator and FIFO Queue in the Extend™ Prototype
Source: Created by author using Extend™

Tasks flow out of the program generator into a "First In, First Out" (FIFO) Queue. The FIFO Queue ensures an orderly flow of instances of tasks through the model. Although not expressly required, Dr. John Osmundson, an authority on visual modeling and simulation at the Naval Postgraduate School, recommended using the FIFO queue as "defensive programming" (Osmundson, 2001), ultimately contributing to stability in model execution by maintaining flow control.

Tasks exiting the FIFO Queue flow into a Set Attribute Block, as shown in Figure 6. The Set Attribute Block assigns a specified attribute to an item flowing through it. In this case, Set Attribute assigns a value to the attribute known as "wage." The wage attribute is set equal to the wage-per-hour (or minute) associated with the individual assigned to a task. Note the connection entering the Set Attribute Block from the Wage Factor Block in Figure 6.

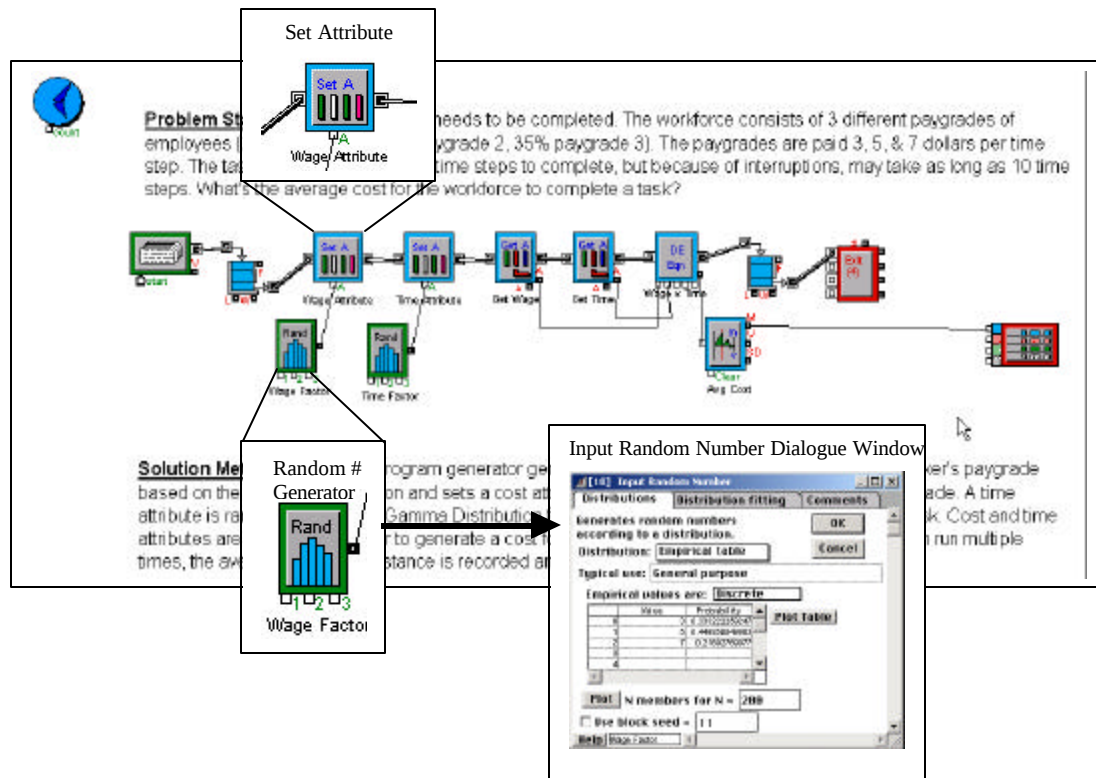


Figure 6. The Set Attribute and Wage Factor Random Number Generator Blocks in the Extend™ Prototype
Source: Created by author using Extend™

The block setting the wage factor is a Random Number Generator passing values to the Set Attribute Block. This particular Random Number Generator (Figure 6) sets the wage factor according to a discrete list of values located in an empirical table. The values in this table may be set in Extend™ through the Input Random Number Dialogue window. Although the values are selected randomly, the discrete table in this example is distributed by percentage. The result of such criteria generates a percentage distribution over large numbers of runs.

Tasks leaving the first Set Attribute Block pass to a second Set Attribute Block called "time attribute." A Random Number Generator sets the time attribute in a similar fashion to the wage attribute discussed above. However, the "time factor" assigned by this Random Number Generator is derived from a Gamma Distribution representing the time required to accomplish a particular task. The difference can be seen in the Input Random Number Dialogue Window in Figure 7.

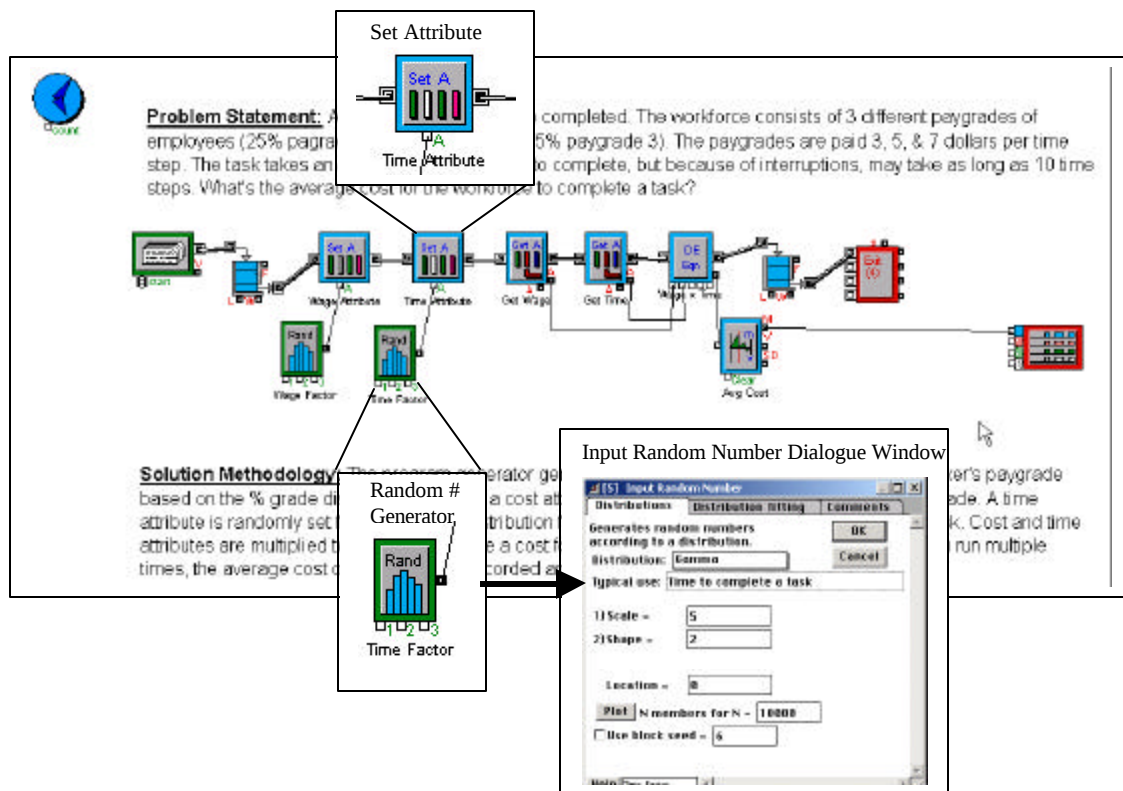


Figure 7. The Set Attribute and Time Factor Random Number Generator Blocks in the Extend™ Prototype
Source: Created by author using Extend™

The task exits the second Set Attribute Block with attributes of "wage" and "time" set for the particular task. Next, the task flows through two Get Attribute Blocks, as shown in Figure 8. The Get Attribute Blocks pass the requested information to an Equation Block, where mathematical calculations can be made.

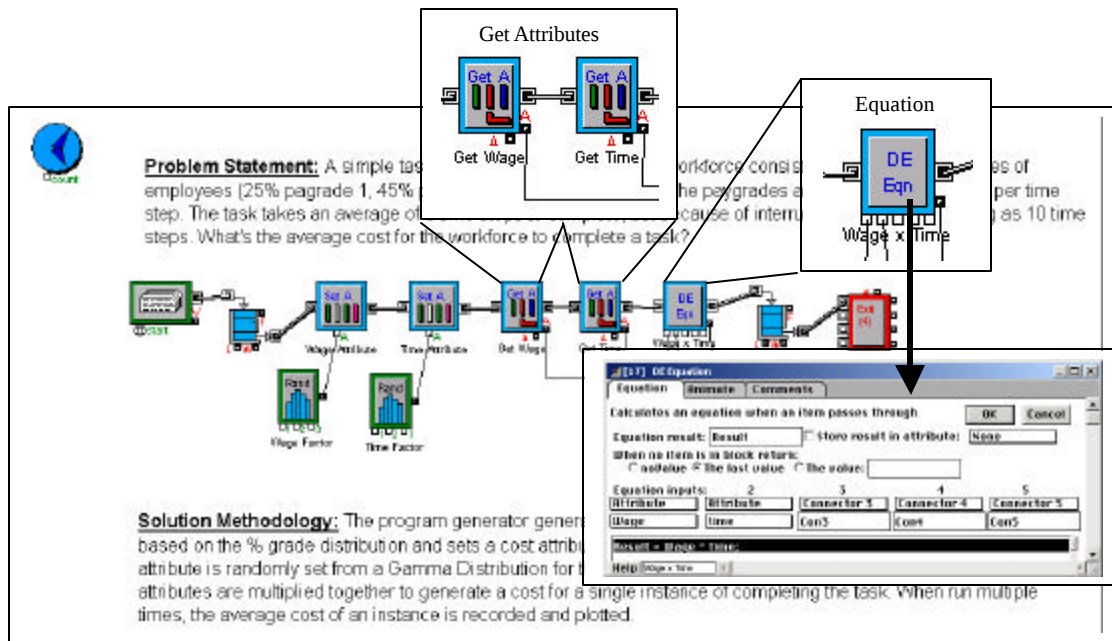


Figure 8. The Get Attribute and Equation Blocks from the Extend™ Prototype
Source: Created by author using Extend™

The Equation Block in this example multiplies the value assigned to the wage attribute by the value assigned to the time attribute. Extend™ permits a wide variety of mathematical operations to be conducted by using the Default Equation Dialogue Window shown in Figure 8.

As seen in Figure 9, the result of the multiplication is output to the Mean and Variance Block, where the cost of each task is averaged and output to a Discrete Event Plotter. Concurrent with the mathematical operations performed on the attributes, the tasks continue to flow through the model. After exiting the Equation Block, the tasks flow through a second FIFO Queue before entering the Exit Block. The FIFO Queue is again employed to ensure orderly traffic flow to the exit. The Exit Block is used as a termination method for the model. Tasks enter the Exit Block, are counted, and subsequently considered complete.

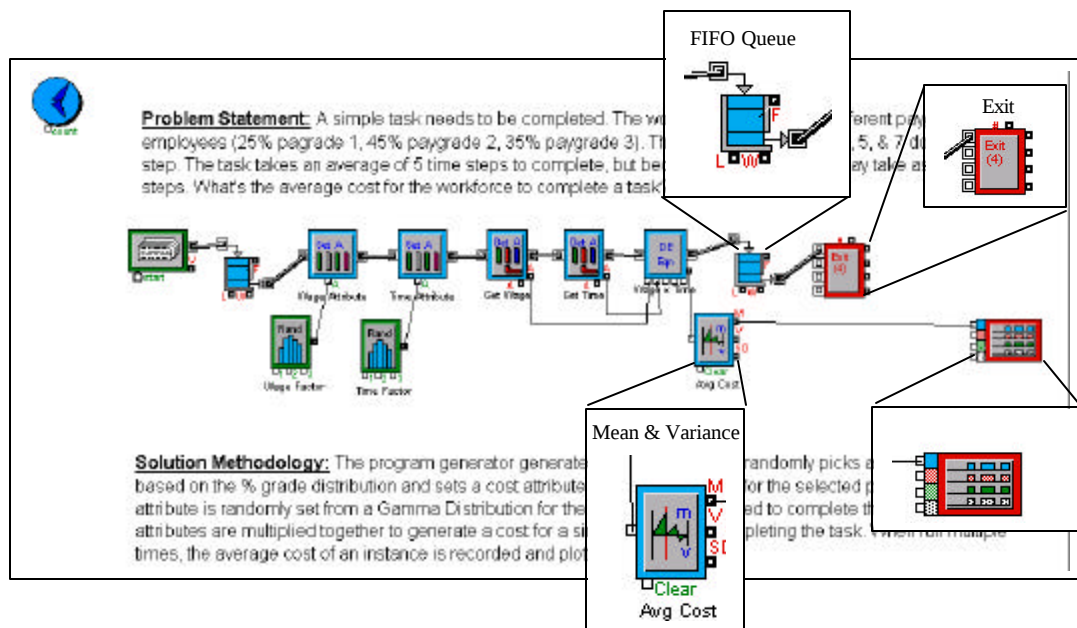


Figure 9. FIFO Queue, Mean and Variance Block, Exit Block, and Discrete Event Plotter
Source: Created by author using Extend™

The block-by-block description accompanying Figures 4 through 9; is intended to clarify the purpose and methods of each component of the Extend™ Model. Additionally, the Extend™ modeling tool offers a variety of building blocks applicable to a wide array of circumstances. Once a user overcomes the initial learning curve, Extend™ becomes extremely intuitive and user-friendly.

Figure 10 summarizes the flow of a particular task through the model. Blocks are numbered and correspond to the numbered description below.

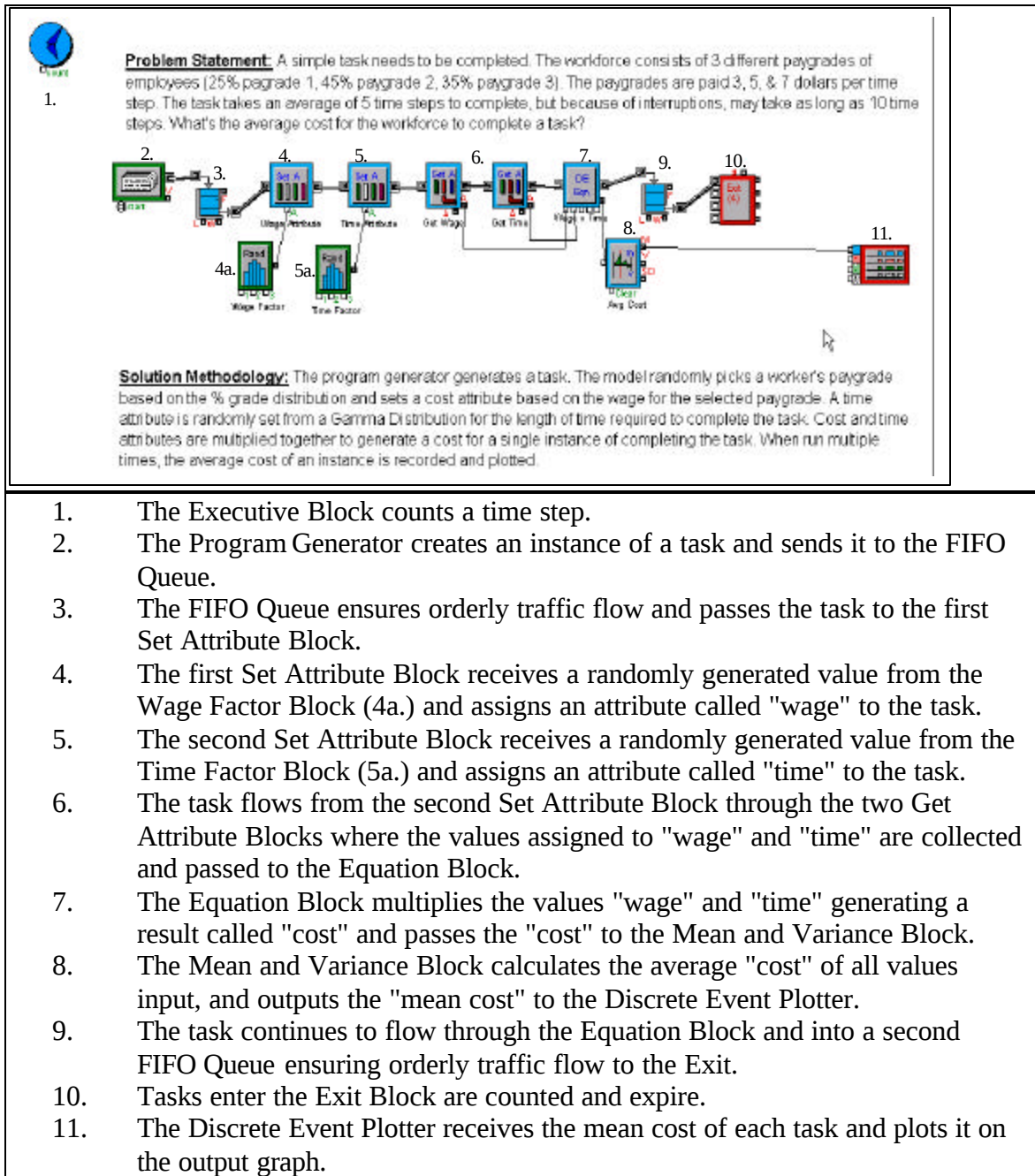


Figure 10. Block-by-Block Flow through the Prototype
Source: Created by author using Extend™

An example of the output graph generated by the Discrete Event Plotter is shown in Figure 11. When the model is run through 1,000 iterations, the output graph shows an average cost-per-task of \$24.13 per iteration.

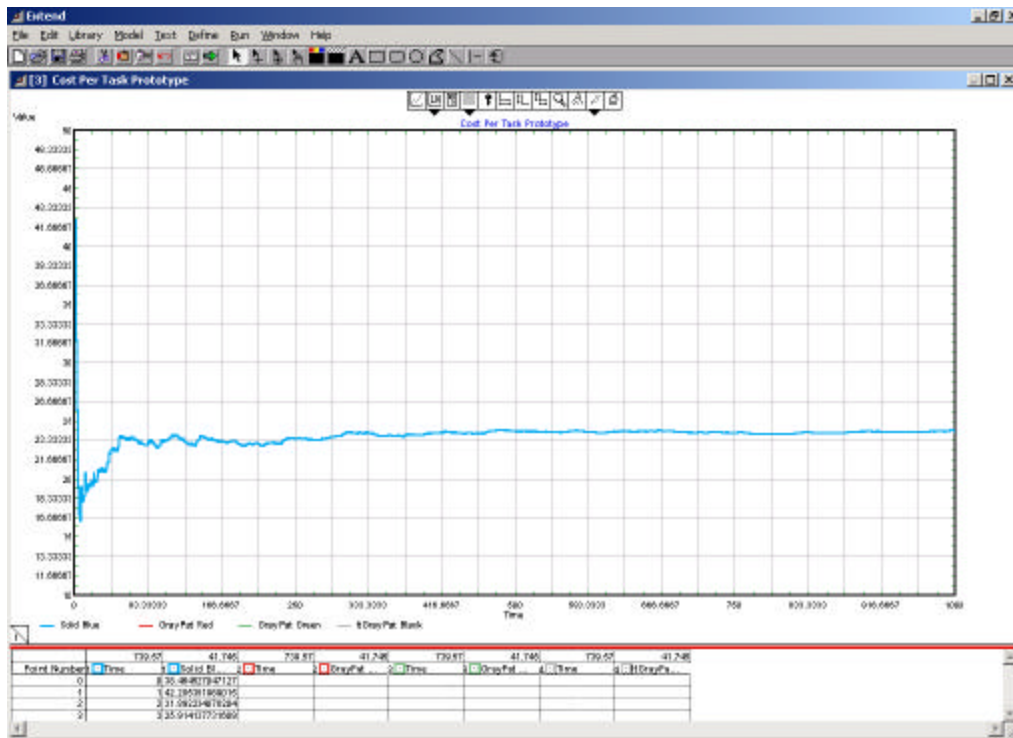


Figure 11. Prototype Output.
Source: Created by author using Extend™

Using the same modeling methodology, a new visual model was developed for each information flow task. Pay grades are assigned in the wage factor block and are associated with the pay grade of the individuals most likely to perform the task. Gamma Distributions are set in the time factor block, centered on the ranges provided by the career recruiters, and models are run from 1,000 to 10,000 iterations. The resulting calculations for the average cost of information flow tasks are output to the graph, as seen in Figure 11.

For comparison purposes, the data collected for the "To Be" model are substituted in the time factor block and the model is again run to generate the average cost of information flow tasks from the "To Be" perspective. Appendix A shows comparisons of "As Is" and "To Be" models for a given task. Circles or ovals around blocks that have updated data identify changes in the "To Be" model. Further explanations of specific changes are noted in the descriptions of the actual model in the Appendix.

The intent of representing the information flow in the "As Is" and "To Be" models is to characterize the associated business processes and potentially redesign aspects that may yield improvements in the overall system. The ability to improve business processes through better management of information has resulted in extraordinary efficiencies in supply chain and logistics management. (Strassman, 1997) Many corporations are attempting to leverage similar technology implementations to gain and maintain customer loyalty and increased revenues. (Karimi, 2001) The American Management Association (AMA), a business education and management development group, reports that its updated contact center has increased efficiency so that average caller wait times are less than 10 seconds, and the AMA now makes 30 percent more in revenues on each call center representative's customer interaction. (Blodgett, 2000) If the Marine Corps recruiting force can apply information technology to the business processes that indicate the most potential benefit, one would hope for productivity increases like those enjoyed by the AMA.

IV. THE "AS IS" RECRUITING BUSINESS MODEL

A. INTRODUCTION

This chapter introduces the eight-step Marine Corps Recruiting process. The intent is to present the reader with an overview of the process by representing it as a model. The entire model is introduced first and includes the eight components as well as attributes contributing to each component. Subsequently, information flow through the model is examined before each component is explored in detail.

Component exploration is focused information flow and discusses the various aspects of information flow inherent in individual component processes. Where applicable, information flow tasks are visually modeled with Extend™ to generate a cost-per-task associated with a particular aspect of the "As Is" model. Costs are identified, recorded, and used as a basis for comparison against the "To Be" model in subsequent chapters.

B. MODEL OVERVIEW

1. Model Components

The systematic recruiting process uses a business model that includes eight components, as shown in Figure 12. These components are:

- Obtaining Names
- Prospecting
- Screening
- Selling
- Processing
- Pool Program
- Shipping
- Command Recruiting

Information about an applicant flows through these components as a list of tasks are performed to ensure as many potential applicants are contacted as possible, and those who seek enlistment are qualified to do so. Tasks one through five encompass what is known as the contact-to-contract chain. This chain of events, or components, takes a

potential applicant from a name obtained and entered into the system, to an enlistee in the Marine Corps. Although all eight components are important to the overall recruiting process, the first five lend themselves most to improvements through information technology. While there may be both direct and indirect benefits to the components that occur subsequent to enlistment, the focus of this thesis remains on the contact-to-contract chain.



Figure 12. The Eight Step Recruiting Process
Source: Created by the author using Visio™

C. INFORMATION FLOW TASKS ASSOCIATED WITH COMPONENTS

The components to be modeled are components one through five of the recruiting business model. In particular, the information flow tasks associated with each component

are of most significant concern. The use of information technology tools to improve the information flow in these stages has the potential to improve the entire process and ultimately contribute to improved productivity overall.

The information flow tasks to be examined are considered in light of discussions with a number of experts in recruiting. Discussions were held with eight career recruiters to develop a consensus benchmark for the lengths of time associated with each information flow task. More information regarding the experts, their qualifications, and input to the thesis is presented in Chapter III, Modeling and Simulation.

D. COMPONENTS TO BE MODELED

1. Obtaining Names

Obtaining Names amounts to "lead generation." The Obtaining Names step has several inputs and one primary output. The inputs are intended to compile list folders to be used as a prospecting resource. Prospecting is the process of systematically contacting each of the leads input through the Obtaining Names process and will be presented in Step 2.

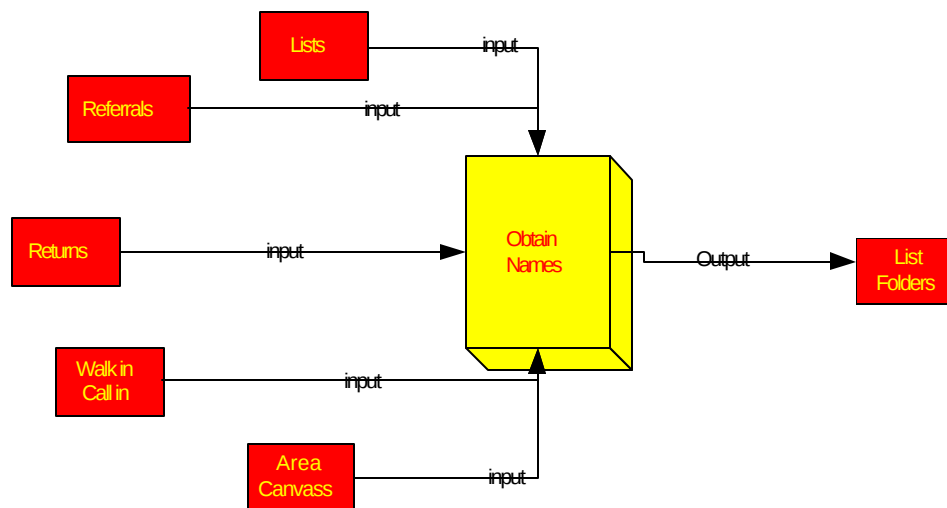


Figure 13. Step 1: Obtaining Names.
Source: Created by author using Visio™

a. Information Flow in Obtaining Names Process

Information flow tasks associated with obtaining names include filing and searching/reconciling. Lists are a major source of new names into the system. High school lists, Armed Services Vocational Aptitude Battery (ASVAB) lists from the Defense Department's High School Testing Program, also called the "ASVAB Career Exploration program." Other sources of names included lists provided by Headquarters Marine Corps (HQMC), lists from motor vehicle registration agencies, newspapers, employment agencies, local organizations and businesses. Typically, lists contain names, addresses and phone numbers of potential applicants.

Upon returning to an office, a recruiter who has received a list must file it in the appropriate list scheduling folder and place the folder in the appropriate cabinet or drawer. The recruiter may be a corporal, sergeant, staff sergeant or gunnery sergeant. It takes from one to five minutes, depending on circumstances and interruptions. Based on the results of Model 1 (Appendix A, p. A-2), the average cost associated with the task is \$.82 per event. Recruiters search, file and retrieve list scheduling folders frequently as part of the process for obtaining names.

Recruiters also receive updated or new lists of potential applicants. These lists must be reconciled for additions, deletions, or information changes. The recruiter performing the task may be a corporal, sergeant, staff sergeant, gunnery sergeant or master sergeant. It takes from 60 to 120 minutes to reconcile a list of 250 students depending on circumstances and interruptions. Based on the results of Model 3 (Appendix A, p. A-4), the average cost associated with the task is \$27.95 per event.

Other sources of names entering the system include:

- **Referrals:** Names of individuals given to recruiters by poolees, command recruiters, local Selected Marine Corps Reserve (SMCR) units, and contacts in the local community.
- **Priority Prospect Cards (PPCs):** PPCs are cards containing applicant information returned to the recruiter as a result of a request by the applicant via 1-800-MARINES, marines.com, or by answering direct mail or other advertising. Recruiters often seek after names that enter the system through PPCs because, in most cases, they represent an applicant who is predisposed to considering military service in general, and the Marine Corps in particular.

- **Walk in/Call in:** Names of individuals who walk into the recruiter's office or call to obtain information or discuss enlistment.
- **Area Canvassing:** Names not previously acquired from another source a recruiter meets while canvassing.

Referrals, Walk in/Call in, and Area Canvassing contact information flows through the process for obtaining names in several steps. The recruiter records an individual's data and searches for and compares the contact information to annotations on lists, and for a card in the working file and Priority Prospect Card (PPC) control file; if found, appropriate annotations are made about the subsequent contact. If this prospect is a new name, then a Prospective Applicant Card (PAC) is created and filed to ensure the systematic processing of this information. The recruiter performing the task may be a corporal, sergeant, staff sergeant, gunnery sergeant or master sergeant. It takes from 10 to 15 minutes to these tasks, depending on circumstances and interruptions. Based on the results of Model 5 (Appendix A, p. A-6), the average cost associated with the task is \$3.82 per iteration.

The output of the obtaining names component is List Folders. These are manila folders that contain a list or collection of names, addresses, and telephone numbers compiled from various sources and organized to permit effective prospecting (Step 2). List folders are associated with list scheduling cards. List Scheduling cards contain identifying information about a list as well as a record of actions associated with the list (date last contacted, point of contact for update). The cards are placed in the working file and action dated to cause a recruiter to include a particular list or lists in their daily or weekly activities.

2. **Prospecting**

The prospecting process takes the names that have been obtained and systematically ensures that each is contacted. The organization and supervision of prospecting is critical to the overall success of systematic recruiting; prospecting is the heart pumping names through the system.

List scheduling cards (LSC) and priority prospect cards (PPC) are action dated and inserted into the working file in order to schedule the prospecting of names obtained. Prospecting the obtained names is accomplished by four methods: Telephone Calls (TC),

Area Canvassing (AC), Home Visits (HV) and Office Traffic (*Volume I, Guidebook for Recruiting*, p.3-L-2).

The information flow in prospecting is presented in Figure 14. Prospecting generally covers two areas: people who have and have not been previously contacted. The recruiter fills out a Prospective Applicant Card (PAC) on all new contacts who are: (1) not disqualified by some obvious and or disclosed mental, moral or physical problem; (2) not hostile (i.e. not belligerent, argumentative, or threatens violence); (3) not in another Service's Delayed Entry Program. PACs are then action-dated and placed in the working file. Contacts who disclose a temporarily disqualifying factor are action-dated and placed in the Disqualified (DQ) Hold section of the working file.

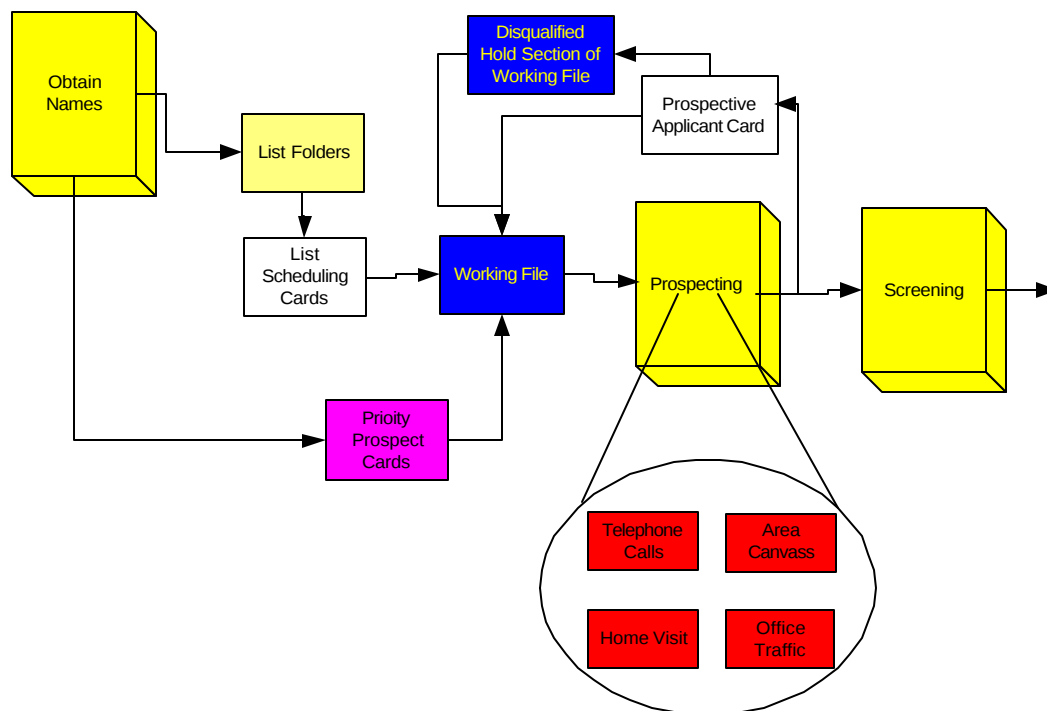


Figure 14. Step 2: Prospecting
Source: Created by the author using Visio™

The second type of person to be contacted is one for whom the recruiter has previously completed a PAC and the action date on the PAC became due. This individual is again contacted through one of the prospecting methods, and additional information is

annotated on the PAC. While the contact may not initially express interest in enlisting, it is the recruiter's job to encourage interest and obtain an interview.

As outlined in the *Volume I, Guidebook for Recruiters*, PACs are worked for one year from the date of preparation, or in the case of a college student, the date of the last college re-check, (to see if the person is still in college) which ever is later. PACs are then discarded except in the following circumstances:

- If an individual is temporarily disqualified under the current standards, an entry is made in the "destroy date" block for one year from the date of disqualification. This PAC is then placed in the DQ Hold section of the working file until the re-check date arrives.
- If the applicant is still disqualified, the PAC is destroyed. If after the last college re-check, the prospect is still attending college, the PAC is passed to the appropriate Officer Selection Officer (OSO).
- If upon making a college re-check, the prospect has dropped out of college, the PAC is worked for another year from that date.

a. Information Flow Tasks Associated with Prospecting

- (1) Identify, sort and distribute the cards from the working file.

Daily, a Non-commissioned Officer in Charge (NCOIC) must go to the working file, identify, sort, and distribute the cards dated to be worked for a particular day. The NCOIC may be a staff sergeant, gunnery sergeant, master sergeant, or master gunnery sergeant. Assuming the NCOIC has four recruiters and takes an average of 15 minutes (total) to prepare the cards for distribution and costs, the average cost associated with the task is \$5.13 per iteration, based on the results of Model 7 (Appendix A, p. A-8).

(2) Receive cards from the working file, organize and schedule prospecting. A recruiter receives the cards dated to be worked for a particular day. He or she must organize and schedule the prospecting activities in a scheduling and results (S&R) book, including manually transcribing some information from the cards. The recruiter may be a corporal, sergeant, staff sergeant, gunnery sergeant, or master sergeant. It takes from 10 to 20 minutes (for approximately 15 cards) to perform the tasks, depending on interruptions. Based on the results of Model 9 (Appendix A, p. A-10), the average cost associated with the task is \$3.62 per iteration.

(3) Read and dial telephone number, make appropriate annotations to list, Prospective Applicant Card (PAC), and Schedule and Results (S&R)

Book. A recruiter reads a telephone number from a list and places a call to a prospective applicant. Subsequently, he or she makes appropriate annotations to the list, PAC, and S&R sheet. The recruiter may be a lance corporal, corporal, sergeant, staff sergeant, gunnery sergeant, or master sergeant. It takes from one to three minutes to perform the tasks, depending on interruptions. Based on the results of Model 11 (Appendix A, p. A-12), the average cost associated with the task is \$.72 per iteration.

(4) Create a new PAC after Area Canvass (AC) or Home Visit (HV). Upon returning to the RSS, a recruiter must transfer AC or HV information from his or her S&R book to a new PAC and cross check the appropriate high school list. This should take from three to five minutes per contact. The recruiter may be a lance corporal, corporal, sergeant, staff sergeant, gunnery sergeant, or master sergeant. It takes from one to three minutes to perform the tasks, depending on interruptions. Based on the results of Model 13 (Appendix A, p. A-14), the average cost associated with the task is \$.1.29 per iteration.

(5) Tabulate and reconcile prospecting objectives against prospecting results. Daily, weekly and monthly, a recruiter must keep track of the prospecting he or she accomplishes and measure the prospecting performed against the prospecting objectives scheduled. The process takes an average of 15 minutes for daily and weekly reconciliation and can be an hour for monthly reconciliation. Monthly reconciliation includes Standards of Effectiveness (SOE), Business Percentages, and pertinent ratios. The recruiter may be a lance corporal, corporal, sergeant, staff sergeant, gunnery sergeant, or master sergeant. Based on the results of Model 15 (Appendix A, p. A-16), the average cost associated with the task is \$ 3.73 for daily and weekly and \$10.32 for monthly reconciliation per iteration.

3. Screening

Screening is the process of evaluating the prospect's eligibility for enlistment as defined by the current edition of the *Military Personnel Procurement Manual* (MPPM), and eliminating from the enlistment process, those who fail to meet the minimum acceptable standards. As shown in Figure 15, screening generally falls into three categories: moral, mental, and physical.

Moral screening covers issues such as police records, drug/alcohol abuse, dependents, citizenship, or prior service. Mental screening is conducted by determining education level and administering the Wide Range Achievement Test, the Enlistment Screening Test, and, ultimately the Armed Services Vocational Aptitude Battery (ASVAB). Physical Screening covers age and health-related issues, including mental/emotional health. It is generally conducted with the help of Department of Defense Form 2246, and Standard Forms 93 and 88. Screening forms are further detailed in the MPPM and Report of Requirements Analysis for the Automated Enlistment Package.

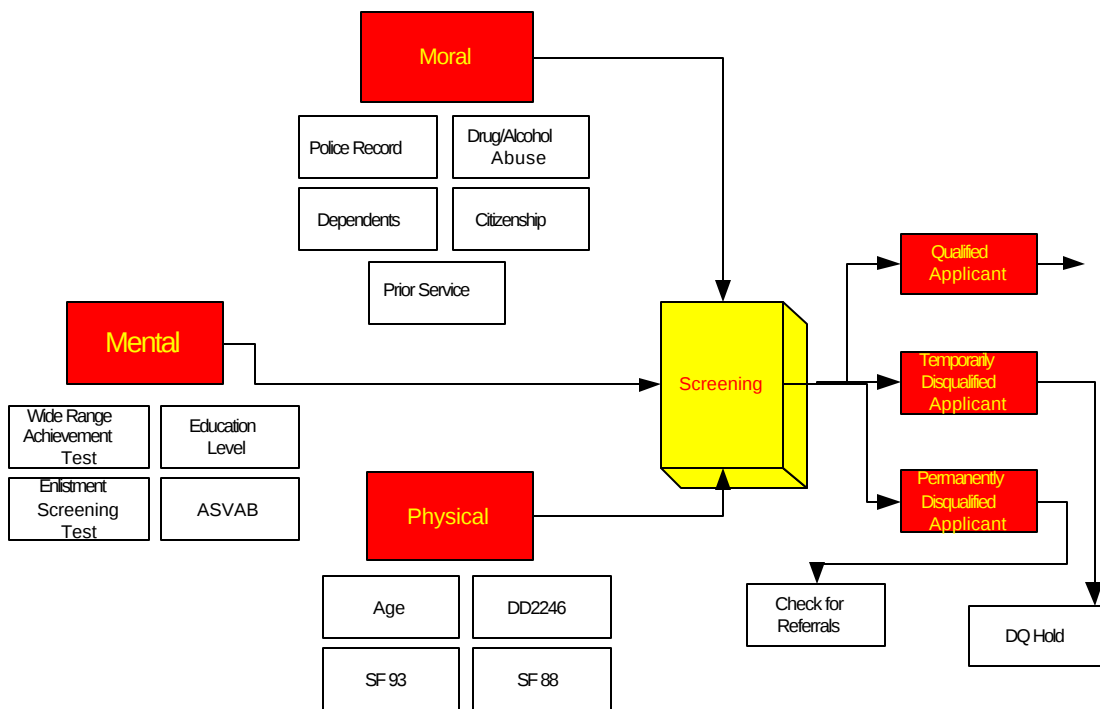


Figure 15. Step 3: Screening
Source: Created by the author using Visio™

It is critical to understand that screening is a continuous process. Applicants may or may not have disqualifying circumstances in their history at the time of enlistment. New issues may develop after joining the Delayed Entry Program prior to shipping. To ensure that only qualified applicants are shipped to recruit training, screening must

continue throughout the process. Keeping this in mind, the "eight step" process might be better modeled as shown in Figure 16.

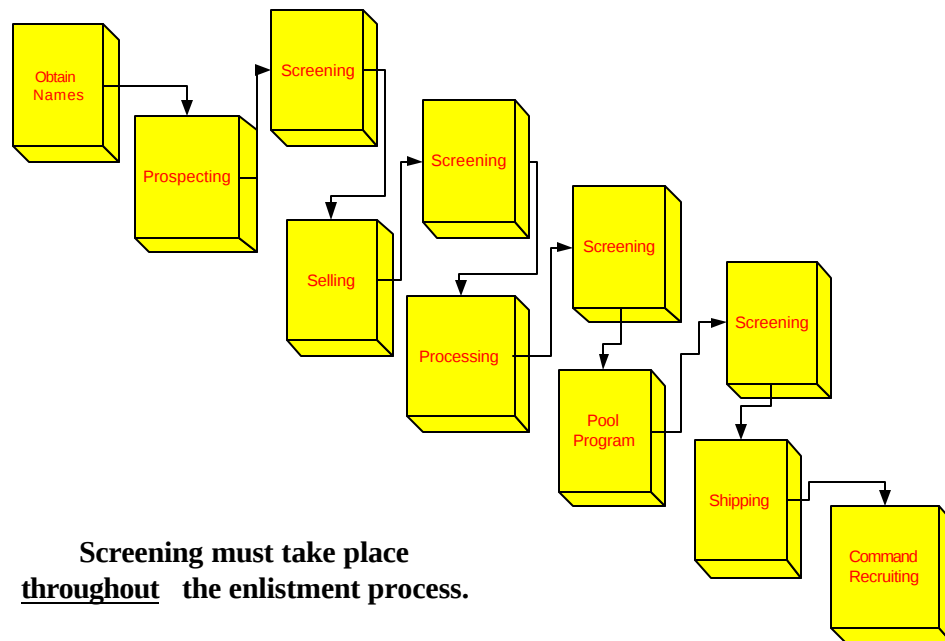


Figure 16. Screening is Required throughout the Process
Source: Created by the author using Visio™

a. Information Flow Associated with Screening

(1) Make appropriate annotations to Prospect Applicant Card (PAC) as a result of screening. A recruiter screens an applicant for eligibility and must record his or her findings on the PAC. The recruiter may be a lance corporal, corporal, sergeant, staff sergeant, gunnery sergeant, or master sergeant. Based on the results of Model 17 (Appendix A, p. A-17), the average cost associated with the task is \$ 2.37 per iteration.

4. Selling

The sales process begins with an applicant who has been basically screened and found to be morally, mentally, and physically qualified for enlistment. As seen in Figure 17, a recruiter conducts formal sales presentation known as an interview. During the interview, the recruiter attempts to uncover and clarify the applicant's needs, and matches each need with a corresponding benefit. If successful, the recruiter gains a commitment to

enlist and schedules the applicant for processing. Once an applicant is screened, sold, and scheduled, he or she is declared a New Working Applicant (NWA) and the creation of the enlistment package, or contract, begins.

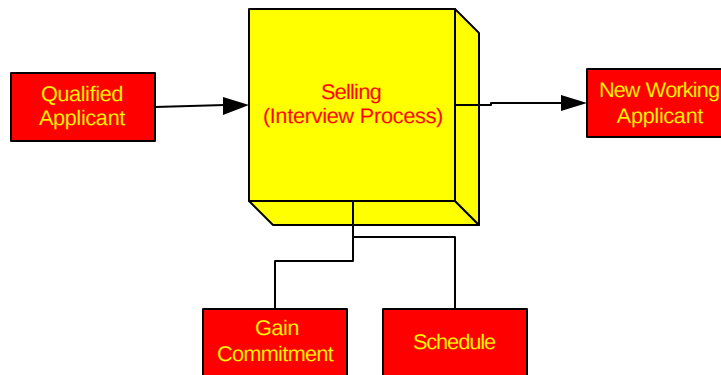


Figure 17. Step 4: Selling
Source: Created by the author using Visio™

A variety of sales tools are available to assist the recruiter in this endeavor.

- Professional Selling Skills - Selling skills taught to the recruiters at Recruiters School and reinforced by local training to help them clarify applicant needs, support those needs with benefits, handle concerns and close sales.
- Benefit Tags - Probing tools to help the recruiter uncover prospect needs by presenting eleven concepts representing a combination of tangible and intangible benefits of service.
- Proof Sources and Visual Aids - Sales tools designed to represent a variety of aspects about the enlistment process and the benefits of military service. These tools include the Product Knowledge Sales Book (PKSB or Blue Book), videos, testimonies and other proof sources designed to help handle concerns and obtain a strong commitment. (*Vol. I, Guidebook for Recruiting*, 2000)

a. Information Flow Tasks Associated with both Selling and Processing

(1) Create the enlistment package: At the completion of the sales presentation, a recruiter and an applicant must do the manual administrative work to complete the associated forms for the enlistment process. The recruiter may be a lance corporal, corporal, sergeant, staff sergeant, gunnery sergeant, or master sergeant. Based on the results of Model 19 (Appendix A, p. A-20), the average cost associated with the task is \$35.36 per iteration.

Figure 18 depicts the processing of a New Working Applicant (NWA). An NWA is an applicant who has been screened, sold, and scheduled to enlist. This model is pertinent to both the selling and processing components, because the creation of the enlistment package is concurrently the last aspect of the selling component and the first aspect of processing.

5. Processing

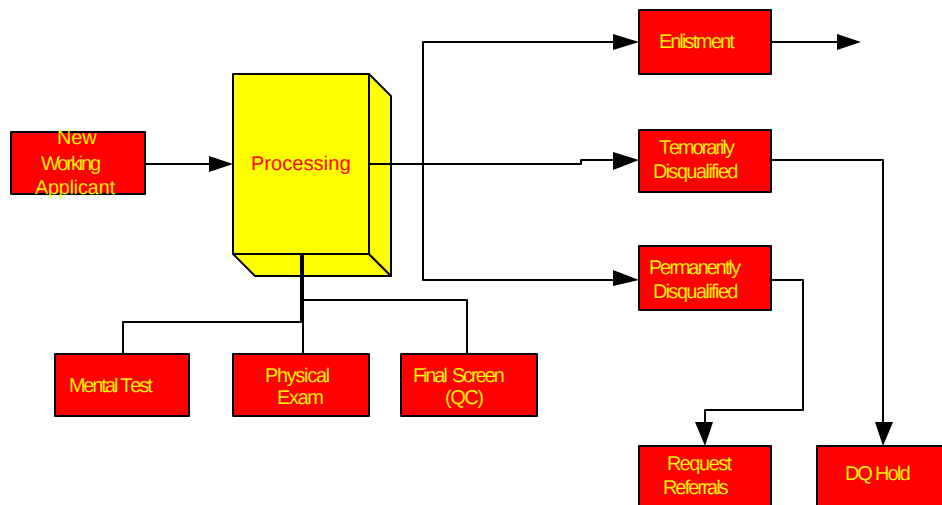


Figure 18. Step 5: Processing
Source: Created by the author using Visio™

The processing of a NWA begins with the Armed Services Vocational Aptitude Battery (ASVAB). This may be administered at a Military Entrance Processing Station

(MEPS), a certified testing facility other than the MEPS, or in the public or private school system as part of the Department of Defense “ASVAB Career Exploration Program” (Today’s Military, 2001). Because an applicant may take the ASVAB any time prior to processing and because it is a screening tool, the ASVAB should be considered as part of both the screening and processing components.

A composite of the ASVAB subtests known as the Armed Forces Qualification Test (AFQT) is used to determine basic enlistment eligibility. Applicants with a score in AFQT Categories I through IIIA (at or above the 50th percentile) are preferred; those with scores in AFQT Category IIIB (between the 31st and 49th percentile) may also qualify for enlistment. Applicants in AFQT Category IV (between the 10th and 30th percentile) are normally disqualified, while those in AFQT Category V are disqualified by law. (MPPM, 1997.)

The Physical Exam portion of applicant processing consists of a review of the applicant’s Department of Defense Form 2246, Standard Form 88 and Standard Form 93, to uncover any potentially disqualifying issues that may be currently present or part of an applicant’s past history. Following the paperwork review, a certified physician conducts a physical exam to appraise the applicant’s present condition.

A final screening process takes place as a quality assurance step to ensure the accurate and truthful representation of information in the applicant’s enlistment paperwork. This includes applicant-provided information on all forms and paperwork as well as valid birth certificates, education diplomas, medical and/or legal records, as required. Upon completion of the enlistment process, an applicant is sworn into the Delayed Entry Program and becomes a member of the enlistment pool. Because the process described is conducted at a MEPS and involves a variety of people and systems outside of the Marine Corps, no attempt is made to quantify associated information flow tasks or costs in the MEPS environment.

Applicants temporarily disqualified are returned to the recruiter. The applicant and recruiter develop an action plan to deal with the temporary disqualification. In the case of a permanent disqualification, the applicant is surveyed for potential referrals and returned home.

E. THE "AS IS" MODEL, AN EXAMPLE OF INFORMATION FLOW

The information flow in the recruiting process may be visualized as a funnel. Names obtained enter the system from a variety of sources and are subsequently prospected and screened before selling begins. The nature of Systematic Recruiting is intended to process as many names through the system as possible. As a result, there will be some commonality in the associated information flow, but it is unlikely that any one recruit will pass through all of the tasks associated with information flow described in the discussion covering the components of the current "As Is" model. More likely, tracing a typical applicant's information flow will yield reasonable costs associated with information flow from obtaining names through selling components. Summing the results of the Extend™ Models will yield an associated cost of information flow for a given recruit.

The name of John Jones, a typical applicant, is obtained from a high school list provided to a recruiter by a high school guidance counselor (step one-obtain names). The list is appropriately filed, and the list-scheduling card is placed in the working file with the appropriate action date. Subsequently, while prospecting (step two) the recruiter contacts John and creates a Prospect Applicant Card (PAC). John indicates he currently intends on going to college, and the recruiter annotates the PAC and action dates it for follow-up in 90 days. When the action date arrives, the recruiter's NCOIC selects the day's cards from the working file, organizes them for distribution and distributes them. The recruiter receives his or her cards for the day and plans them into his schedule. The recruiter notes that he or she had contacted John Jones previously and that John may be re-contacted at North High School while presenting at a career day. The recruiter makes a point of contacting John at school, and finds out that he is still interested in college, but may not have the finances to attend immediately after high school. Therefore, he is interested in exploring his options and the benefits available for financing college through the Marine Corps College Fund. The recruiter sets an appointment with John for the following afternoon. Later, when he or she has a chance, the recruiter transcribes the new contact information about John from his Schedule and Results (S&R) book to John's PAC. The recruiter calls John at home that evening to reinforce John's decision to seek additional information and confirm the appointment for the following afternoon. The

recruiter asks a few additional basic screening questions (step three) and records them on John's PAC. When John arrives the following afternoon, they discuss some of the points John is interested in and agree to conduct some additional screening to see if John is qualified for the options that interest him. With the screening complete, the recruiter conducts an interview (step four-formal sales presentation), concluding with John's commitment to enlist. With this commitment, the recruiter begins the preparation of the enlistment package that serves as John's contract with the government for service in the Armed Forces (step five).

F. CURRENT INFORMATION TECHNOLOGY SYSTEMS IN USE

1. Introduction

Having described the components and traced an example focusing on information flow, one must also consider the information technology systems currently in use. It is important to recognize the focus of this thesis is on information flow in recruiting at the recruiter and recruiting substation level. The information systems described below are applicable at the Recruiting Station level and above, and offer no advantage to the individual recruiter or Non-commissioned Officer In Charge (NCIOC).

2. The Automated Recruit Management System (ARMS)

Presently, MCRC uses a twenty-year-old mainframe batch-mode system, known as the Automated Recruit Management System (ARMS) to manage accession information. ARMS requires specially trained operators who use emulation terminals to input data through a non-intuitive command line-based interface (Felton and Hamashin, 1997 p.145.) Data input into the system begins only after an applicant has enlisted. The terminals are used to enter pertinent enlistment data about an applicant and to assign occupation or program categories that will ultimately guide military occupational specialty (MOS) selection after recruit training. The majority of this information is redundant, as it has already been entered on a variety of forms, cards, and logs compiled throughout the enlistment process. The batch processing methodology produces a functional outcome, but occupational programs or specialties selected but not used, appear to be unavailable for several days until the batch is run and programs are released. Data entry occurs at the RS for enlisted recruiting. There is no automated system at the RSS.

Although a capable technology when fielded, ARMS has become obsolete and burdensome to maintain. Currently, poor documentation of system code is resulting in significant costs to perform general maintenance and to implement modifications and enhancements.

3. Marine Corps Recruiting Information Support System (MCRISS)

The Marine Corps Recruiting Information Support System - Recruiting Station (MCRISS-RS) is a modern, web-based system, which captures all of the functionality of ARMS, reduces some redundant data entry, models systematic recruiting processes, and allows capturing of information at the new working applicant (NWA) stage. Rather than unintuitive alphanumeric codes and a command lined-based interface resident in ARMS, MCRISS-RS will additionally provide drop-down menus and an easy-to-use "point and click" query capability. Major Michael Asmus, USMC, Director of Information Strategy at MCRC, reports initial fielding of MCRISS-RS has been completed and procedures are currently being executed to bring the system on line in a modular fashion.

Additionally, MCRISS-RS creates an online database of the applicant information collected. This has proven significant in initial testing. Master Sergeant Brenda Wolfe, USMC MCRISS-RS Operations Chief, noted that database searches have uncovered previously disqualified applicants circumventing accession policies by attempting to enlist in another state after having been disqualified in their local area. Further research is being conducted to examine the potential benefits of trend analysis and mining of the MCRISS-RS data to support initiatives ranging from manpower policy decisions to marketing.

However, MCRISS-RS is utilized at the Recruiting Station level as a replacement for ARMS. MCRISS-RS data are entered once an applicant reaches the new working applicant (NWA) stage. As discussed earlier, a NWA is an applicant who has been screened, sold and scheduled for enlistment. Components one through four have been completed, and component five has begun before any information is entered into MCRISS-RS. Therefore, little has been done to assist the recruiter or NCOIC with the information flow tasks associated with the first four components of the business model.

G. INFORMATION FLOW COSTS IN THE "AS IS" MODEL

Section D presents an example of the "As Is" information flow for a typical applicant's enlistment. Although a somewhat simplified version of the process, it essentially covers all the pertinent steps from obtaining names through selling. With the completion of the enlistment package, John is scheduled for enlistment processing and declared a New Working Applicant (NWA). If MCRISS-RS were deployed and operational, it is at this point where John's information would be entered into the system for future use. Considering ARMS is the current system employed, John's information won't be entered until his enlistment occurs.

Therefore, the intent of this portion of the thesis is to explore the costs associated with information flow occurring prior to any information being placed in a recruiting information system. Linking together the average cost-per-task (direct compensation of a recruiter manually performing the information flow tasks) associated with the information flow in John's case, Table 3 estimates the total information flow costs required to enlist John.

Table 3. Estimate of Information Flow Costs

Number	Component	Task	Cost
1	Obtain Names	File a High School List	\$.82
2	Prospecting	Information flow associated with a telephone call	\$.72
3	Prospecting	Create and file a PAC	\$.40
4	Prospecting	Retrieve, Sort and Distribute PACs*	\$.34
5	Prospecting	Receive PACs and organize into plan of day**	\$.72
6	Prospecting/ Screening	Information flow associated with a phone call	\$.46
7	Screening	Basic Screening	\$ 2.37
8	Selling/ Processing	Creation of the Enlistment Package	\$ 35.13
		Total	\$40.96

* Assume one card of 15 sorted & distributed.

** Assume one card of 5 received & organized

⚠ These costs represent the cost of information flow and should not be construed as the total cost to enlist an applicant.

The results in Table 3 show the cost of the information flow for a typical applicant does not seem prohibitive. However, the ratios and statistics driving success in Systematic Recruiting require consideration. Applying the ratios described in the national standards, and assuming a national recruiting mission of 40,000 net new contracts, the costs associated with information flow increase substantially.

Currently, about 40,000 enlistees flow through a process similar to the one described and subsequently ship to recruit training. However, approximately 12 percent of applicants who enlist in the Delayed Entry Program fail to ship. This boosts the gross contracting mission to $40,000 + (12\% \text{ of } 40,000)$ or 44,800 persons.

In Section D, we compared the flow of names entering the systematic recruiting process to that of a funnel. Many potential applicants' names enter the system. Through prospecting, screening, and selling, the potential pool of applicants grows increasingly narrow. Each step in the process requires information flow tasks with associated costs. Although it is difficult to gauge the total volume of names entering the system, systematic recruiting provides the tools with which we can gauge the numbers required to pass through each component to ultimately accomplish the assigned recruiting mission.

Starting with one applicant successfully enlisted and inverting the analogy of the funnel from above, one can use the applicable ratios to calculate the number of potential applicants required to generate one recruit. Using the national standards, the processing ratio (NWA to Contract) is 1.2:1. This increases the number of "typical applicants," such as John Jones, to 53,760. Nearly 54,000 iterations of the information flow described in steps 1-8 above translate into \$2.2 million dollars ($\$40.96 \times 54,000 = \$2,211,840$) in cost across the recruiting force per fiscal year. Of these costs, more than 86 percent (approximately \$1.9 million) is accrued in the creation of enlistment packages alone. Using the closing ratio (Interview to NWA) of 3:1, nearly 53,760 NWAs indicate 161,280 iterations of information flow through items 1-8.

Exploring the associated costs from another perspective, one can also trace the recruiter's activities using the prospecting goals and objectives. Additionally, this perspective will allow us to consider the administrative maintenance that may be overlooked if we only focus on one applicant.

As Captain Jack East, USMC, Executive Officer, Recruiting Station Portland Oregon commented, a recruiter is typically required to write three new contracts per month. The individual recruiter's mission is derived from the missions assigned to the intermediate echelons between the individual recruiter and the nationally assigned mission. Consideration of how the three new contracts are further broken down by gender, AFQT Category and duty status are beyond the scope of the discussion.

Again using the National Standards for ratios and effectiveness, the processing ratio of 1.2 NWAs to one contract indicates the recruiter needs 3.6 NWAs to get three contracts. Since he or she cannot recruit .6 of an applicant, the recruiter actually needs four NWAs to get three contracts. Considering the recruiter's closing ratio of three interviews to get one NWA, he or she now needs 12 interviews to get four NWAs.

Each prospecting activity has standards of effectiveness that also provide ratios indicating the number of specific activities necessary to generate an interview: 30 Telephone Calls (TC) to generate one interview, 16 Area Canvas Contacts (AC) to generate an interview, and 12 Home Visits to generate an interview. Consequently, each of the following: 360 TC, 192 AC or 48 HV should generate the number of interviews needed to ultimately produce the three net new contracts. In total, if these prospecting goals were accomplished, they would generate three times as many interviews as required. Recruiters divide the associated prospecting labor by establishing business percentages. These percentages yield fractions of each of the required activities with the intention of yielding exactly the number of interviews needed to generate the net new contracting mission. Business percentages vary based on a recruiter's personal skills, but average business percentages would be 60% TC, 30% AC, and 6% HV with the remainder of 4% held for office traffic.

Therefore, a typical recruiter may make 216 TC ($.6 \times 360$), 58 AC ($.3 \times 192$) and 3 HV ($.06 \times 48$) in a given month. In terms of the cost of information flow, the Extend™ models for Information Flow for a Telephone Call and Information Flow for Area Canvassing and Home Visits give us average costs per task. This translates into \$234.82 (\$155.52 in TC plus \$79.30 in AC/HV).

Again returning to the National Standards of Effectiveness, the activity to interview ratio gives us a reasonable estimate of the number of screenings that take place. At 15:1 for TC, 8:1 for AC, and 5:1 for HV, we can derive 14 interviews from TC (216/15), 7 interviews from AC (58/8) and 1 interview from either HV or OT. These sum to 22 interviews where screening can reliably be considered to take place. Using the Extend™ model for information flow in screening with a PAC, these 22 iterations translate into \$51.70 (22x2.35) in labor associated with information flow.

Additionally, we must account for information flow costs that support the activities above--in particular, the maintenance and calculations associated with tracking and maintaining the prospecting data. The Extend™ models indicate costs per task of \$78.25 (\$3.13 x 25 days) for daily and \$10.04 for monthly iterations of data analysis, totaling \$88.29.

Given we have already calculated the costs associated with the creation of an enlistment package, Table 4 shows the total cost of information flows associated with a recruiter's efforts in a given month.

Table 4. Monthly Cost of Information Flow Tasks per Recruiter

Information Flow Tasks	Cost (\$)
Prospecting	\$234.82
Screening	\$51.70
Enlistment Packages	\$140.52
Data Analysis	\$88.29
Total for 1 Recruiter-Month	\$515.33

Multiplying this figure by 2,500 for the Marine Recruiting Force, we find an information flow cost of \$1,288,325 per month across the Marine Corps. While this figure cannot hope to capture every instance of information flow costs, it provides a reasonable baseline from which to draw comparison. MCRC reports 2,650 recruiters assigned to the recruiting force. However, the use of 2,500 recruiters for the purpose of calculations, is intended to account for recruiters assigned to instructor, inspector, and other support billets, who do not normally perform the tasks described.

The results of evaluating the information flow modeling indicate the greatest potential for gaining efficiency is in automating the day-to-day administrative

requirements associated with recruiting. In particular, the creation of the enlistment package and the searching, filing, and annotating of index cards appear to slow the information flow process significantly. Recalling from the discussion of current and future information systems, neither ARMS nor MCRISS-RS support the tasks discussed above. Therefore, we will consider improving these aspects of the process in the "To Be" model.

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V. THE "TO BE " RECRUITING BUSINESS MODEL

A. INTRODUCTION

This chapter introduces the "To Be" model of information flow in the recruiting business process. It begins by presenting an overview of the "To Be" model and considers options for using Information Technology solutions to improve information flow. The discussion then turns to Potential IT solutions, including the Automated Enlistment Package, the Microsoft Office Productivity Suite and an end-to-end Customer Relations Management solution. Business process components are again examined in detail to assess information flow improvement of the "To Be" model developed using the Extend™ visual modeling and simulation tool. The model output is used as a basis for comparison between the "As Is" and "To Be" Models of the recruiting business process.

B. MODEL OVERVIEW

The "To Be" Model is intended to be a vision of the gains in efficiency attainable by applying information technology to the recruiting process. Having discussed the elements of the recruiting process currently in place, there are some obvious opportunities to streamline information flow through the process. Currently, administrative redundancies abound and the numbers of human interactions slowing the information flow are significant. Ultimately, the goal of this discussion is to suggest areas where the effectiveness of Information Technology can ease bottlenecks in the process and return productive time back to the recruiter. By employing the computer to perform the tasks for which it is best suited, and the recruiter to accomplish the tasks in which he or she excels, we hope to make the entire system more productive as well as more efficient.

Three options can be pursued in the "To Be" model. The first, and subject of most significant discussion, is to permit recruiters to employ an automated enlistment package specifically addressing the process component with the most obvious administrative burden and potential for streamlining. Second is to consider improvements available by employing a productivity tool such as Microsoft Office. Last, one can apply an end-to-end customer relations management solution for the recruiting process.

C. POTENTIAL INFORMATION TECHNOLOGY SOLUTIONS

1. Automated Enlistment Package

The automated enlistment package (AEP) is a separate, stand-alone software application that can be installed on the desktop and laptop computers deployed to the recruiting force. The AEP is scheduled for deployment by October 2001. If it produces the results intended, it will serve as the best example of applying Information Technology to gain efficiency in the information flow of the recruiting process. As previously discussed, the "As Is" model currently creates an enlistment package manually, by entering data on often more than 20 forms. Many of these forms contain common data elements such as name, date, and social security number. Additionally, many forms require data entry without mistakes, line-outs, or other corrective measures. The AEP intends to eliminate redundant data entry and alleviate the associated administrative burden by permitting pertinent data to be entered once and automatically populate the respective fields on the respective forms as required. In the event a mistake is made, a recruiter can simply correct the error and reprint the form in question.

Applying the AEP to the information flow process involved in creating an enlistment package shows the best efficiency gain of any IT solution discussed. The gains in efficiency can be directly tied to direct labor costs and show considerable savings over the lifecycle of the software. As discussed in Chapter III, Modeling Methods and Software, direct labor costs are calculated by using the figures from the Office of the Under Secretary of Defense (Comptroller) FY 2001 DoD Reimbursable Rates. (Defense Technical Information Center, 2001)

The performance goal for the AEP is to reduce the time required to create an enlistment package from two hours to 30 minutes. This reduces the direct labor cost from \$35.36 per applicant to \$10.03, a reduction of 72 percent (comparison of results of Models 19 and 20, Appendix A, pp. A-20, A-21). Given the number of enlistment contracts generated in a fiscal year, the potential savings can be significant. MajGen. Parks, USMC (CG, MCRC) has emphasized the system should be simple, functional, and delivered to recruiters quickly. (Asmus, 2001) As a result, the AEP remains a stand-alone software application, and although developed with a common data format, there is no linkage between the AEP and MCRIS-RS or any other information system. The AEP

is currently in rapid development and is expected to move from the March 2001 requirements determination phase, through system design/development, and into production before 1 October 2001. The project development budget is set at \$70,000.

The development, training, and maintenance figures provided by Major Michael Asmus, USMC, Director of Information Strategy at MCRC, identify the associated maintenance costs required for tracking trouble calls and bug fixes at \$20,000 per year. Assuming a 10 percent discount rate, over a five-year expected life cycle, the present value of the maintenance costs is \$83,396. The training requirements for the AEP are expected to be relatively small. Production of a detailed user's guide is part of the vendor's contract and includes outlines and tutorials to be used by Recruiter Instructors at Recruiting Station monthly training. It is anticipated that, after receiving a one-hour period of instruction at monthly training, recruiters will have the skills necessary to run the program successfully (AEP Report of Requirements Analysis June 2001). Integrated into the program is a "wizard" option to walk a recruiter through the contract creation process and help the recruiter learn the procedures. As the recruiter becomes more proficient and comfortable with the software, the wizard option may be bypassed to expedite the process.

Using one hour as the training benchmark, the training costs may be estimated by totaling the hourly wage figures by pay grade, and multiplying the number of recruiters of a given pay grade by the wage figure. This yields \$48,119 in training costs. Summing the development, maintenance, and training costs, the projected total system cost is \$201,515. Payback analysis, to determine how long it will take to recoup the cost of the system outlays, indicates payback in just 1.21 months. Calculations are shown in Appendix B.

Appendix B shows an outlay of \$138,118 (Development and Training) in year zero, followed by the savings accruing in years one through four. Assuming a 1 October deployment of the software, and using net present value for the maintenance expenses and future value for the savings, the total investment is recouped by mid November. Although it seems a speedy payback, when one considers the value of reducing the time it

takes to complete an enlistment package by more than 72 percent, it becomes readily apparent that the savings are even more significant.

While the AEP Model shown in Appendix A indicates the cost savings, it does not explain the intangible value of the time savings returned to the recruiter. Whether the recruiter is able to generate more contacts and contracts with the time saved, better serve his or her poolees and reduce the number of Delayed Entry Program discharges, or simply spend more time with his or her family, the intangible return on the investment will likely be the most highly valued aspect of the program. The automated enlistment process offers the greatest tangible and intangible returns on investment of any of the information technology solutions considered.

2. Productivity Suite

The Microsoft Office Suite as a Productivity Tool: With the introduction of the Navy Marine Corps Intranet (NMCI) in fiscal years 2003-2005, recruiters will have greater access to Information Technology tools and the connectivity to increase the efficiency and effectiveness of their recruiting mission. The Navy and Marine Corps describe NMCI as follows:

A strategic capability the Department of the Navy (DON) will use to meet the challenges of executing our warfare doctrine in support of Joint Vision 2010, the Revolution in Military Affairs, and support to the Revolution in Business Affairs. Replacing the Navy's numerous shore-based networks, NMCI will equip us with the access, interoperability, and security for our information and communications by providing voice, video and data services to all Navy and Marine Corps personnel. Coupled with the Navy's shipboard Information Technology for the 21st Century and the Marine Corps' embarked Marine Corps Tactical Network (MCTN), NMCI will provide a worldwide reachback capability for our deployed forces (NMCI Overview, 2000) .

The deployment of NMCI translates into IT resources for the recruiting force. The recruiting force will be allocated hardware and software on a price-per-seat licensing agreement, offering computer resources and connectivity meeting or exceeding current deployed assets (Vigil, 2001). Non-commissioned Officers In Charge (NCOIC) will have laptop computers and there will be one desktop for every two recruiters on the street. Additionally, NMCI will provide the Microsoft Office suite of software products as well as network connectivity to the recruiting force and Marine Corps.

According to information obtained from the Marine Corps' NMCI web page (<http://www.cio.usmc.mil/c4/NMCI/index.htm>) the NMCI costs-per-seat are expected to range from \$232.34 to \$246.51 per month. Specifications of hardware and software configurations and components are available at the above-noted Web site, but consideration for the purposes of this discussion is focused on the Microsoft Office suite and network connectivity.

Studies conducted by MCRC regarding the implementation of NMCI indicate that most users are satisfied with their current levels of proficiency regarding Microsoft Office applications. This is a significant issue, as it will ultimately reduce training costs associated with the NMCI rollout. Where users are not comfortable with their level of Microsoft Office skills, training will be provided as needed through local vendors and contracts to be established. Authority to establish training contracts is at the discretion of the local command, and as the NMCI has yet to be deployed, bids and contracts to support the training have yet to be requested or established.

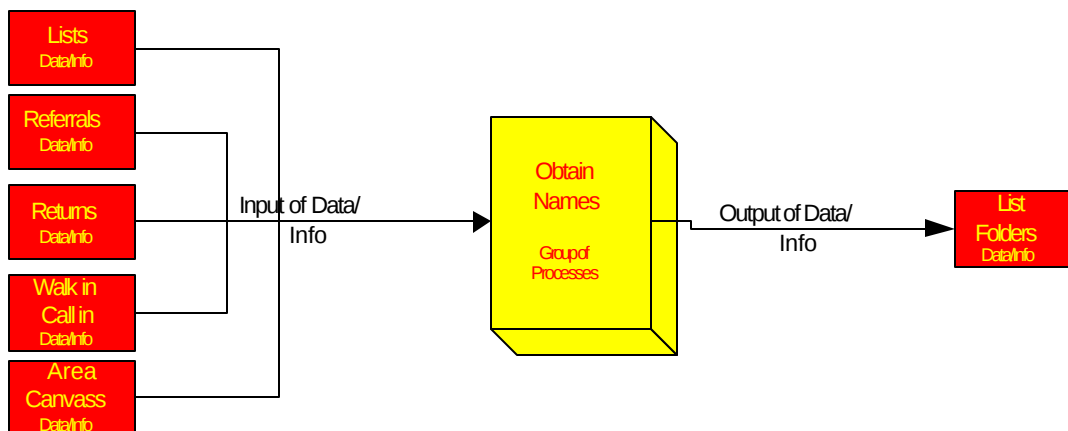
The manner in which the productivity suite will be employed will likely vary with the proficiency, experience, and autonomy of the end-users. While the prescriptive nature and detailed inspection requirements of systematic recruiting will likely encumber some innovation, the following suggestions offer opportunities to leverage the technology solutions resident in the NMCI contract. Considering the "As Is" business process model, adoptions of IT solutions offered by Microsoft Office lead to gains in productivity and time saved, but do little to re-engineer the processes or model components. Recognizing the inertia associated with the entrenched stakeholders who have developed, employed, and reinforced systematic recruiting, it is difficult to consider wholesale changes to the underlying processes of the system, and the implementation of such changes are beyond the scope of this discussion. The application of Microsoft Office provides the ability to expedite and improve the information flow in the existing processes. The strengths of Microsoft Office are more likely to be employed by the recruiting force as NMCI is deployed and the ability to share and exchange information gains greater use. Once the advantages become apparent, wider acceptance and adoption of the practices are likely to become common.

For ease of organization and description, the suggestions for the "To Be" model are organized according to the recruiting business model component to which they apply. In some cases, particular applications may bridge one or more component.

D. COMPONENTS EXAMINED FOR THE "TO BE" MODEL

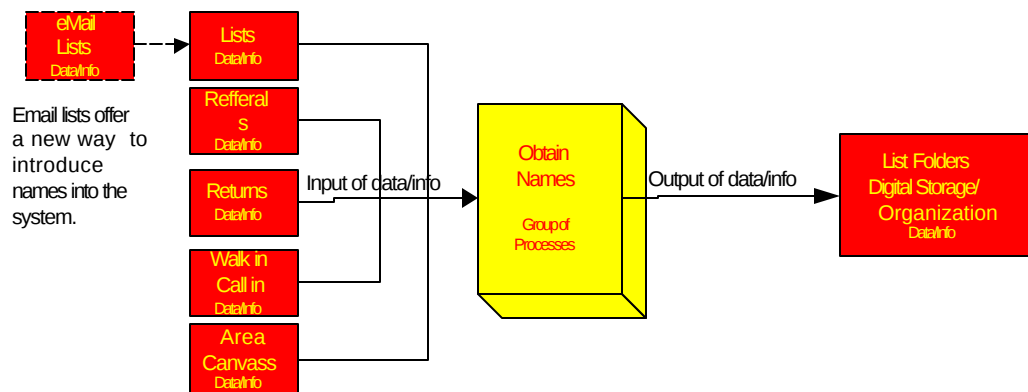
1. Obtaining Names

As illustrated in Figure 19, The Obtaining Names component currently shows Lists, Referrals, Returns, Walk in/Call in and Area Canvassing as sources of names entering the system. While these sources are not likely to change as a result of the implementation of the Microsoft Office suite, changes to the organization of the names are probable. In what is becoming a more common practice, many schools or sources are providing student lists electronically. Currently, these lists must be uploaded and printed to paper before being filed in list scheduling folders. By using Microsoft Office applications such as Outlook or Access, the digital lists can be added to contact databases quickly and efficiently. Instead of being manually filed in a cabinet or drawer, physically separated from the recruiter's desk, the list folders could simply be maintained by Outlook or Access as shown in Figure 20.



Data and Information about Names enter the system from a variety of sources and are processed to provide lead information in an organized and usable manner. Much of the work required is administrative or clerical in nature, and is illustrated below.

Figure 19. "As Is" Step 1: Obtaining Names
Source: Created by the author using Visio™



Data and Information about Names enter the system from a variety of sources and are processed to provide lead information in an organized and usable manner. The To Be system organizes names electronically rather than in physical folders and cabinets.

Figure 20. "To Be" Step 1: Obtaining Names
Source: Created by the author using Visio™

Paper lists would still require manual entry at this point, but some application of scanners and optical character recognition may be applied at a later date. Additionally, a new type of list may be used to enter names into the system. At the moment, there is no way to accommodate e-mail lists of names potentially supplied to the recruiter. As shown in Figure 20, this new list could serve two purposes: first, it could introduce names not previously captured, thereby increasing the total number of names to be processed by the system; second, e-mail lists could offer the possibility of a new type of prospecting that, until connectivity is established, has been untested in Marine Corps recruiting.

a. "To Be" Information Flow Tasks and Cost Model Associated with Obtaining Names

Like the "As Is" Model, the "To Be" information flow tasks associated with lists include filing and searching/reconciling. Upon returning to an office, a recruiter who has received a list on computer disk imports the list to either Outlook or an Access database. The recruiter may be a corporal, sergeant, staff sergeant, or gunnery sergeant. It takes from 30 seconds to two minutes, depending on circumstances and interruptions. Based on the results of Model 2 (Appendix A, p. A-3), the average cost associated with the task is \$.49 per event. This is a cost reduction of \$.33, or 40 percent.

Recruiters also receive updated or new lists of potential applicants. These lists must be reconciled for additions, deletions, or information changes. The recruiter performing the task may be a corporal through master sergeant. It takes from seven to ten minutes to reconcile a list of 250 students (perform matched and unmatched queries), depending on circumstances and interruptions. Based on the results of Model 4 (Appendix A, p. A-5), the average cost associated with the task is \$8.52 per event. This is a cost reduction of \$19.52, or 70 percent.

(1) Referrals, Walk in/Call in, and Area Canvassing contact information flows through the obtaining names process in several steps. The recruiter records an individual's data in his or her Schedule and Results (S&R) book; searches for and compares the contact information to annotations on lists and cards in the working file and Priority Prospect Card (PPC) control file; if found, appropriate annotations are made regarding subsequent contact. If this prospect is new, then a Prospective Applicant Card (PAC) is created to begin the systematic processing of this information. The recruiter performing the task may be a corporal through master sergeant. It takes from six to seven minutes to perform these tasks, depending on circumstances and interruptions. Based on the results of Model 6 (Appendix A, p. A-7), the average cost associated with the task is \$1.82 per iteration. This is a savings of \$2.00, or 48 percent.

2. Prospecting

Prospecting activities will continue to be the pump driving the names through the system. While prospecting activities, presented in Figure 21, are likely to remain unchanged, the information flow associated with them could vary greatly.

Step 2: Prospecting

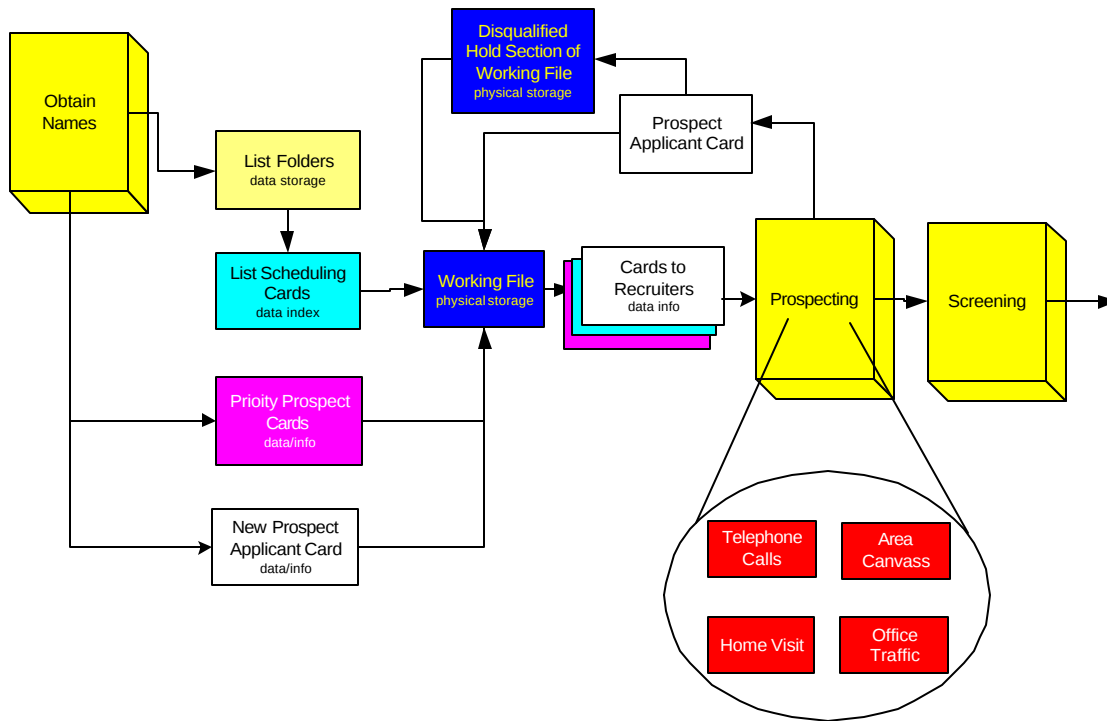


Figure 21. Step 2: Prospecting
Source: Created by the author using Visio™

a. "To Be" Information Flow Tasks Associated with Prospecting

The distribution of information by an NCOIC can be done electronically. Assuming a working file organized as an Access database, or Outlook Contact Folder, the NCOIC is no longer required to go to the wooden box and search for the appropriate action date. Annotating cards with Outlook for review on a particular date causes them to be presented to the NCOIC for distribution automatically. With all the associated information about an applicant readily available, the NCOIC can quickly consider the points of emphasis and distribute the contacts (electronic PACs) to the recruiter. This is particularly useful in circumstances where recruiters are geographically dispersed and eliminates the requirement for driving back and forth. This revised process is not intended to suggest the recruiter and NCOIC no longer need to discuss the prospective applicants or particular priorities. The use of Microsoft Office should offer a greater opportunity to better examine such issues by reducing peripheral activities.

Continuing with the scenario, an NCOIC opens Outlook or an Access database and is alerted to the cards action dated for a particular day. He or she may accept or override the recruiter last assigned to this contact, add comments in a "notes" field, and distribute the cards via email as shown in Figure 22. The NCOIC may be a staff sergeant through master gunnery sergeant. The assumption here is that the NCOIC supervises four recruiters and takes a total of 10 minutes to prep the cards for distribution. Based on the results of Model 8 (Appendix A, p. A-9), the average cost associated with the task is \$3.70 per iteration. This is a savings of \$1.48, or 28 percent.

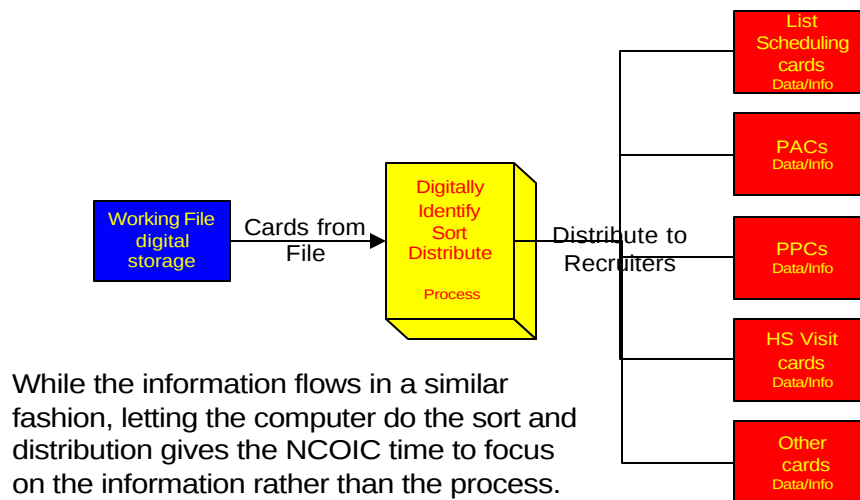


Figure 22. Digitally Sort and Distribute Cards for Prospecting
Source: Created by the author using Visio™

The "To Be" model for incorporating the distributed PACs from the NCOIC to the recruiter is one circumstance where little benefit is derived from an injection of Information Technology. Currently, no provision has been made to incorporate a personal data assistant (PDA), permitting easy transfer of information. Even with the assets provided by NMCI, PACs distributed by e-mail must be printed or transcribed to Scheduling and Results (S&R) books. Therefore, there is no advantage from an information flow perspective except in the cases where such distribution alleviates the need to drive long distances to receive cards from the NCOIC. The use of PDAs in such an application would be an interesting area for further research, but is beyond the scope of this thesis.

The information flow associated with the telephone calling process can be accelerated as well. A recruiter no longer has to read the applicant's phone number and dial the phone. The auto dialer tool in Outlook permits a recruiter to point and click to dial an applicant's phone number. This reduces dialing errors and permits the recruiter to remain focused on his or her call. The information gathering process associated with the call is further expedited by permitting the recruiter to add, delete, or annotate information about a particular prospect on the contact screen as the conversation is taking place. By using check boxes, radial buttons, or drop-down menus, recruiters can reduce the amount of data entered by keyboard. The "To Be" model for the information flow in making a telephone call indicates an improvement from more than three minutes to two minutes. The recruiter may be of any rank from lance corporal through master sergeant. It takes an average of two minutes to perform the tasks, depending on interruptions. Based on the results of Model 10 (Appendix A, p. A-11), the average cost associated with the task is \$.44 per iteration. This is a savings of \$.28, or 39 percent.

The information flow associated with Area Canvass and Home Visit data can be easily transferred as well. A significant part of the time it takes to process such information is reviewing the list folders, PPC Control Box, and working file to determine whether or not an applicant has already been contacted. By supplying the applicant's contact information, the computer can easily search the entire database for matches and, if required, create a new contact. Once found or created, the recruiter simply updates the collected information and action dates the contact as necessary. As seen in the NCOIC's distribution example, the path of information flow remains essentially the same; it is simply expedited by utilizing a computer.

In the "To Be" model, The recruiter must create a new PAC after Area Canvass (AC) or Home Visit (HV). Upon returning to the RSS, he or she must transfer AC or HV information from his or her S&R book to a new PAC and cross-check the appropriate high school list. The cross check is accomplished in a fraction of the time by querying Outlook or an Access database for the applicant's name. This should take less than two minutes per contact. The recruiter may be a lance corporal through master sergeant. It takes from one to three minutes to perform the tasks, depending on

interruptions. Based on the results of Model 14 (Appendix A, p. A-15), the average cost associated with the task is \$.77 per iteration. This is a savings of \$.52, or 40 percent.

The daily and monthly reconciliation of a recruiter's prospecting activities and the recalculation of standards of effectiveness, Sales, Closing and processing ratios also lend themselves to significant improvement with the integration of the Microsoft Office Suite of software tools. During interviews with career recruiters, many of those queried reported average times to complete the reconciliation, ranging from 15 minutes for daily numbers to as much as an hour for monthly reconciliation. However, as Master Gunnery Sergeant Bennett, a career recruiter in the 12th District noted: "...daily tabulations take seconds to input the numbers and monthly calculations happen automatically in the spreadsheet." The use of Microsoft Excel to make the calculations required is a perfect fit to such a task. Reviewing the worksheets in the *Volume 1, Guidebook for Recruiters*, the worksheets are organized in columns and rows and intended to produce mathematical calculations to represent statistics of accomplishment and effectiveness. Data entry in a spreadsheet is easy, and calculation error is far less likely than manual methods. Additionally, a recruiter or NCOIC can conduct "what if" analysis to see the effects of shifts in business percentages or other criteria. Given the reliance of Systematic Recruiting on statistical analysis, a system that produces faster and more accurate results regarding the statistics driving decision making gives the recruiter a decided advantage.

Given an average labor cost of \$10.24 per iteration for the monthly reconciliation, and 2,500 production recruiters across the nation, savings are immediately apparent. More important than the cost reduction is the value of the time savings to the recruiter and NCOIC who are now able to examine the spreadsheet output and make decisions about training and strategy and pursue other productive activities. The efficiencies gained in this situation result from leveraging the strength of the computer for tasks computers do well and leveraging recruiters for tasks in which they excel. The development costs for such an application are negligible when balanced against the return. A talented Sergeant could build a spreadsheet template in an afternoon and make it available on the Recruiting Command Website for distribution.

Based on the results of Model 16 (Appendix A, p. A-17), the average cost associated with the daily or weekly prospecting drops to \$1.86 and monthly prospecting drops to \$0.00, as data input for daily and weekly numbers updates monthly information automatically. This is a savings of \$1.82, or 50 percent, on daily and weekly prospecting reconciliation, and \$10.24, or 100 percent, on monthly reconciliation.

As in other instances involving the adoption of Microsoft Office as a productivity tool, Figure 23 Illustrates, the path of information flow in the screening process essentially remains the same. However, the slower aspects of searching for previously filed PACs, and filing new or updated cards, can be accelerated.

3. Screening

Information Flow in Screening:

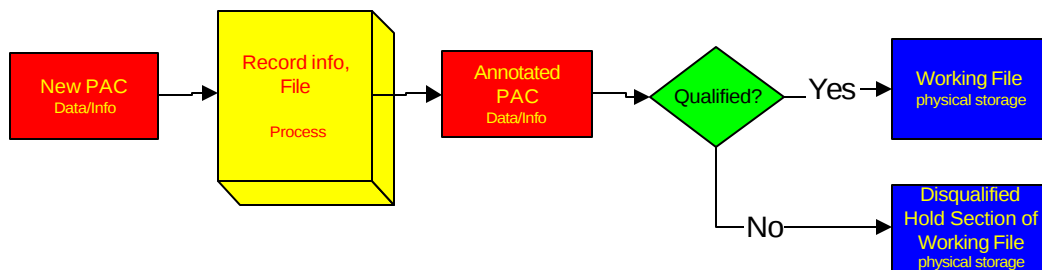


Figure 23. Step 3: Screening
Source: Created by the author using Visio™

In many cases, the screening being done is recorded on a prospect applicant card (PAC). Screening with a PAC is intended to collect basic qualifying or disqualifying information and track the attempts to contact the applicant. Using option buttons, dropdown boxes and check boxes to collect information such as date, sex, education level, citizenship, marital status, and so on, much of the screening information can be collected with little keyboard entry. However, given the paper PAC has many of the same options to check or circle particular criteria, the basic screening process using the Prospect Applicant Card (PAC) yields little increased efficiency. The small gains noted are in finding and filing rather than annotations. Additionally, computerized screening

conducted outside of the office will not be applicable as most recruiter assets will be desktops rather than laptops or other mobile assets.

4. Selling and Processing

As discussed previously in the Automated Enlistment Package section, the AEP appears to be the single greatest improvement in efficiency examined during this thesis process. While the application of the AEP does not negate the requirement for the exchange of information between the applicant and the recruiter, it drastically reduces the time required to complete the process by eliminating redundant data entry. As discussed in other segments of the thesis, this application is the best example of using the computer to do things the computer does well while permitting the recruiter to do the things he or she does well. Figure 24 illustrates the Processing component.

Step 5: Processing

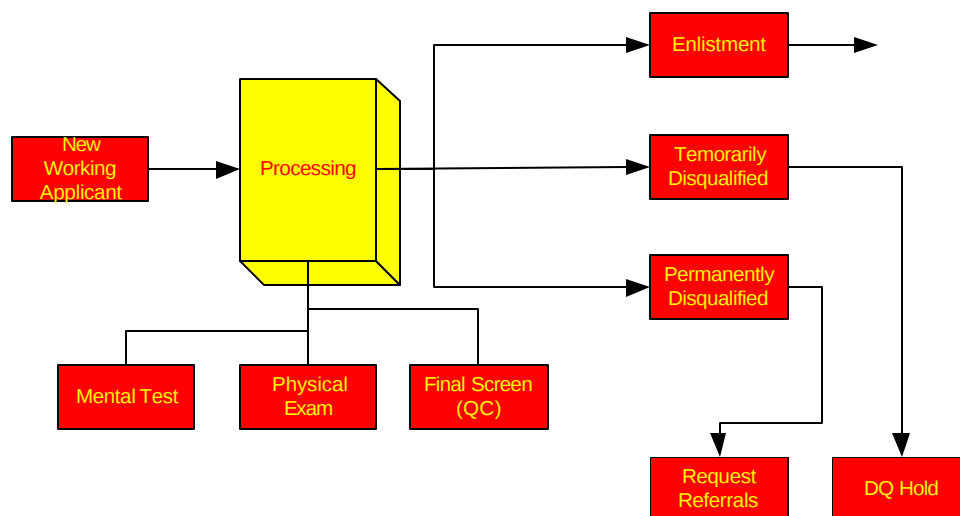


Figure 24. Step 5: Processing
Source: Created by the author using Visio™

As discussed previously in the Automated Enlistment Package section, the AEP appears to be the single-greatest improvement in efficiency examined during this research. While the application of the AEP does not negate the requirement for the exchange of information between the applicant and the recruiter, it drastically reduces the time required to complete the process by eliminating redundant data entry. As discussed in other segments of the thesis, this application is the best example of using the computer

to do things the computer does well while permitting the recruiter to do the things he or she does well.

a. *"To Be" Information Flow Tasks Associated with Both Selling and Processing*

Create the enlistment package: At the completion of the sales presentation, a recruiter and applicant must still complete the administrative work associated with the enlistment contract. However, in the "To Be" model, they do so using the Automated Enlistment Package. The recruiter may be a lance corporal through master sergeant. Based on the results of Model 20 (Appendix A, p. A-21), the average cost associated with the task drops from \$35.36 to \$10.04, a savings of \$25.32, or 72 percent.

The 72 percent reduction in time spent by the recruiter will return dividends across the recruiting force in increased contracting, reduced DEP attrition, and improved recruiter quality of life.

Additionally, gains can be made in this component by automating other administratively intense aspects of processing. The waiver request process is another instance of redundant data entry. Whether requesting consideration for medical or moral disqualifications, much of the same personal information required at other stages of the enlistment process is also required for a waiver. Employing a scanning device to permit waiver documentation to be input and forwarded as e-mail attachments would speed the request process and save the costs associated with fax machines and long distance charges when waivers are passed through the chain of command.

D. THE END-TO-END SOLUTION

Given the potential solutions discussed thus far, one would be remiss not to consider what some vendors choose to describe as a "silver bullet" for the recruiting process. Customer Relations Management (CRM) is a strategy used in competitive business environments, combining the information, systems, policies, processes, and employees of an organization in an effort to attract and retain customers (Menconi, 2000, para. 1).

CRM may be decomposed into two functional areas, operational and analytical. Operational CRM includes measurable customer interactions. Analytical CRM involves aggregating customer data, collected through operational CRM, breaking it down to

identify trends and feeding that customer information back into the operational arm (Surmacz, 2001, para. 4). CRM vendors tout the ability to glean insight about individual customers and personalize interaction to create mutually beneficial relationships. As an Accenture executive comments: "Relationships based on customer insight propel an organization from simply treating customers efficiently to treating them relative to their needs, preferences, and value potential - which will keep the customer coming back. " (Nash, 2001, para. 5) Customer Relations Software vendors such as Siebel Systems, Oracle, Microsoft, and Trilogy all offer what they believe is the information management tool best suited to the sales and marketing business model that is the essential foundation of recruiting. They offer an end-to-end solution intended to capture, organize, search, retrieve, file, and retain all the pertinent data associated with information flow in the recruiting process. Additionally, their offers to tie information across the enterprise naturally extend to issues such as contracts and waivers.

Given a recruiter has followed systematic recruiting procedures and documented detailed information about the applicant and related interactions, the working file seems to contain much of the information CRM vendors advertise as essential to success. However, CRM vendors assert their systems go far beyond simply presenting the recruiter with all the pertinent information about a particular applicant. A Siebel representative touts the ability to tag campaigns or marketing events and tabulate results based on responses as a way of reinforcing advertising or promotions. While a Trilogy spokesperson flaunts trend analysis and the potential to tie CRM data to a Geographic Information System to better manage territories.

Although the capabilities presented appear impressive, end-to-end solutions are generally large and expensive, requiring major shifts in business practice methodology (Darwin, 2001, para. 5) The current Air Force system (Air Force Recruiting Information Support System (AFRISS)) cost \$12 million to procure (Feldhaus, 2000). Siebel Systems proposed a \$24 million system for the Navy (Dodge, 2000). These systems have advantages and disadvantages. One of the primary disadvantages has been an inability to quantify the kind of cost-per-task metric used to represent information flow in the "As Is" Model. Balancing the cost of their system versus a combination of marketing outlays and other indirect considerations, the Siebel representative points to economies of scale

gained by implementing their system versus current Marine Corps marketing practices. When questioned regarding the return of productive to time the recruiter, a typical CRM vendor answered with strong conviction, but was unable to quantify the time savings relative to the cost of the software. "I can't tell you exactly how much time your recruiters will save, but they will save tons!" Unfortunately, substantiating such a claim through the Program Objectives Memorandum (POM) and Planning Programming and Budgeting System (PPBS) without objective data to back up the claim has little hope of success.

An Air Force spokesman commented on the Service's proprietary end-to-end system in much the same way. He spoke with strong conviction about the improvements implemented by AFRISS, but had no documentation to serve as a baseline for comparison, nor had he collected data beyond simple anecdotes regarding the return on the \$12 million investment. Further, when queried, local Air Force recruiters stated poor connectivity and low bandwidth hampered the system's use by those in the field. Given the time and mission pressures facing recruiters on a day-to-day basis, tools given to recruiters must immediately work as advertised or risk being regarded as useless or burdensome.

AFRISS precipitated as a Service-specific derivative from the failed Joint Recruiting Information Support System (JRISS). Originally intended to produce an end-to-end Department of Defense-wide recruiting Information System, JRISS was unable to meet the requirements of the Services, and its failure further exacerbated the situation by making reluctant Service Program Managers leery of such programmatic entanglements.

E. THE FINDINGS OF THE "TO BE" MODEL

The "To Be" model we have examined bears a striking resemblance to the "As Is" model in that the components and information flows largely remain the same. Yet, targeted introductions of Information Technology suggest increased efficiency by reducing human-induced slack in the information flow. Where recruiters are slow to find, sort, and file information (obtaining names, prospecting), this thesis suggests Information Technology tools can assist the process by performing these tasks more quickly and accurately. Similar efficiencies may be gained from the time-intensive and error-prone calculator and pencil-based efforts to reconcile prospecting requirements/accomplishments, business percentages, and the sales, closing and

processing ratios. Finally, in selling and processing, the advantages of using the AEP as information tool to populate redundant fields in required forms, perform quality assurance checks, and permit correction of individual errors throughout the enlistment contract, offer significant gains in efficiency for recruiters. In nearly every case, the gains identified offer opportunities for recruiters to be more productive in less time. And, the distribution of these gains across the recruiting force will likely result in increased productivity throughout the nation.

Table 5 highlights the differences between the cost of information flow tasks in the "As Is" and "To Be" models. Monthly information flow tasks totaled \$515.33 per recruiter in the "As Is" model and \$277.54 in the "To Be" model. This is a savings of \$237.79 per recruiter over the course of a month and equates \$594,475 each month across the recruiting force as a whole. Expanded across a fiscal year, the "To Be" model saves more than \$7 million. Results of the cost comparison clearly indicate the "To Be" model realizes significant cost and time savings. Additionally, the tangible and intangible benefits of these savings can ultimately yield increased contracting of new recruits, decreased loss of recruits from the Delayed Entry Program improvements in the quality of life for the recruiter.

Table 5. Comparison of Information Flow Costs for "As Is" and "To Be" Models, and Estimated Savings Under "To Be" Model

Task	Estimated Cost (\$)		Estimated Savings (\$)	
	"As Is"	"To Be"	<u>One Recruiter</u> per Month	<u>Total Recruiting</u> Force per Year
Prospecting	234.82	140.18	94.64	2,839,200.00
Screening	51.70	51.70	0.00	0.00
Enlistment Packages	140.52	40.16	100.36	3,010,800.00
Data Analysis	88.29	45.50	42.79	1,283,700.00
Totals	\$515.33	\$277.54	\$237.79	* \$7,133,700.00

* Note: Calculations are based on (2500 recruiters) x (savings per month) x (12 months)

VI. CONCLUSIONS AND RECOMMENDATIONS

A. SUMMARY AND CONCLUSION

Given the current state of deployment of Information Technology, the IT advantages available to the Marine Corps recruiting force today are somewhat limited. Currently, without the hardware, software, connectivity, and training required, it is still faster, more accurate, and easier for a recruiter or NCOIC to go to the wooden box known as a working file and extract and annotate the index cards applicable to the applicants, poolees, and recruits in a given geographic area. However, the advent of Navy Marine Corps Intranet (NMCI), the fielding of the Automated Enlistment Package, and other technology developments and initiatives will undoubtedly offer new and exciting opportunities to streamline the information flow process and result in a more productive recruiting force.

This thesis begins by presenting an overview of the recruiting process, including the mission, the target market, the various players, and the business rules. Additionally, there is a discussion of the essential aspects of information flow and time management. Subsequently, the Extend™ visual modeling and simulation tool is introduced, and its applicability to the problem is explained.

With a basic understanding of recruiting and an introduction to visual modeling and simulation, the thesis then presents the "As Is" recruiting business model. The model is decomposed into its components, and the information flow through each component is discussed. After presenting the "As Is" model, an example is provided to trace the flow of an applicant and his or her information through the recruiting process. The thesis further discusses current information technology solutions currently in place before detailing the information flow tasks in the "As Is" model.

The introduction of the "To Be" recruiting business model presents an overview of the "To Be" process before discussing potential information technology solutions. Once potential solutions are presented, the thesis describes the components of the "To Be" model. This chapter concludes with the findings of the "To Be" model and a comparison of the information flow costs between the "As Is" and "To Be" models.

The "To Be" model offers nearly a 50-percent reduction in costs associated with information flow when compared with the current or "As Is," model. Recruiters can recoup nearly half of the time now spent on information flow and refocus on more productive efforts. Given that a recruiter's number-one wish is always "more time," the right Information Technology tools offer an unprecedented chance to make the wish come true.

Of the Information Technology tools modeled, the Automated Enlistment Package clearly stands out as the improvement with the most immediate and far reaching benefit. The MCRC/Vendor Team's ability to target a need, and to build and deploy a software system that permits the recruiter to accomplish a task in nearly one-fourth the time, is a perfect example of the intent of this thesis. This one application results in a time savings equivalent to giving recruiters an extra week each year to accomplish their mission.

If the desired end-state from a command perspective is to increase the productivity of the recruiting force, the application of Information Technology tools clearly indicate an opportunity to achieve that end. The information systems studied increase the flow of applicants entering the recruiting chain by improving the obtaining names and prospecting components. With this increase, the statistics and ratios of systematic recruiting ultimately yield additional enlistees. In addition to the increased number of applicants in the chain, the time savings resulting from the use of technology offers recruiters the opportunity to better maintain focus on persons who have already contracted and to reduce the loss of recruits from the Delayed Entry Program. Reductions in recruit attrition and increases in recruit contracting obviously serve to improve the number of net new contracts. Together, both options improve productivity and contribute to overall mission accomplishment.

B. RECOMMENDATIONS

1. Evolution versus Revolution

There are clearly advantages to be gained by incorporating Information Technology solutions in the recruiting business model. The two most obvious are the Automated Enlistment Package (AEP) and the Excel Spreadsheet to assist in the prospecting reconciliation process. Adoption of the AEP results a 72-percent reduction in

the time required to create an enlistment package and, the prospecting spreadsheet reduces the time required for reconciliation of prospecting data by about 40 percent.

These applications save time and money while meeting the ease of use and reliability criteria desired. Of the solutions considered, the AEP and Prospecting Spreadsheet afford the easiest deployment and the best expectation of immediate benefit with minimal cost. These factors will significantly contribute to the likelihood of acceptance by entrenched stakeholders who may be relatively resistant to changes in the business process.

Living and working with the time and mission pressures facing recruiters on a day-to-day basis, tools given to recruiters must work as touted immediately, or risk being regarded as useless or burdensome. The ease of use and reliability requirements, combined with cultural aspects inherent to recruiting, suggest that the adoption of technology solutions should be implemented on an evolutionary rather than revolutionary basis.

The leadership of Marine Corps Recruiting Command is comprised of men and women (officer and enlisted) who have largely devoted their professional careers to achieving success in the most difficult peacetime mission available. They are fervently proud of their collective success and recognize the extraordinary effort put forth by those who have contributed to the recruiting mission since the end of conscription. They believe the current system works because it is detailed and simple in concept, and they have witnessed it first hand. In addition to the pride of ownership in a business model they created and sustained, one can assume the other factors associated with managing change directly affect the attitudes of stakeholders at the recruiting command. Change brings with it the threat of lost relevance, proficiency, influence, and power (Jick, 1993.) These factors, combined with the culture of pride and success, make changes thrust upon recruiting by non-recruiters exceedingly difficult.

The risks associated with a revolutionary strategy to make broad changes in the system far outweigh the perceived benefits. Given the probability of success in software development projects is less than 20 percent, the risk of financial loss is second only to the risk of credibility. In an environment where credibility is the coin of the realm, one is

far more likely to gain success by gradually transitioning to technology tools, building trust among the stakeholders, and creating a demand from the end users.

2. Investigating the End-to-End Solution

Customer Relations Management (CRM) vendors typically promise a silver bullet, capable of collecting, managing, and displaying information about customers in order to better serve their needs (Siebel and House, 1999) The ability to glean insight and understanding about customers' needs and habits gives a CRM-armed employee an advantage for building and maintaining customer relationships (Nash, 2000.) The potential return on such an implementation sounds enticing, but as discussed in this thesis, the metrics for gauging the return on investment or success of a given implementation are often subjective (Surmacz, 2001.) Further, the use of a CRM system entails a major shift in business processes, placing a reliance on methods and technology to which many entrenched stakeholders may object (Gladstone, 1991 p. 3) The combination of less than objective metrics and a profound shift in business practices makes a revolutionary change to a nationwide CRM implementation unlikely.

Even though a nationwide CRM solution does not appear feasible at this time, consideration of a CRM solution should not be dismissed completely. Rather, by exploring and experimenting with currently available CRM systems in a small-scale pilot environment, the recruiting command may better gauge whether or not pursuing implementation on a larger scale is worthwhile. A pilot program with short-term milestones may provide benchmarks for developing metrics as well as feedback for future software development.

CIO magazine (Deck, 2001) lists several keys to successful CRM implementations. These include:

- Break the project into manageable pieces.
- Start with pilot programs large enough to incorporate all the necessary departments and groups needed to initiate the project, but are small and flexible enough to permit modification along the way.
- Ensure the plan includes a scaleable architecture.
- Do not underestimate the volume of data to be collected and ensure the ability to meet expanding storage needs as required.

- Be thoughtful about the data retained. Clarify the utility and benefit of retaining each category.

Each of the points listed above is applicable to a recruiting command CRM pilot program. Manpower constraints will require the project stay small to be effectively managed. Phasing the project or breaking it into components supports that constraint. The incorporation of all necessary departments and groups provides an opportunity to gain input, insight, and ultimately commitment from stakeholders who might otherwise resist a broader scale deployment. Scalable architecture facilitates expanded experimentation and may eventually provide the flexibility to deploy the system to a much larger level if warranted. Consideration of the data to be collected fits into the issue of scalability. The potential to collect large volumes of information is significant, and the utility of the data to be collected is considerable as well. One must also evaluate the data structure to be maintained and give consideration to its integration with other systems.

The lack of objective metrics for CRM implementations and anticipated stakeholder resistance are valid reasons for refusing to consider a “leap of faith” toward a nationwide CRM deployment. However, corporate adoption of the technology solution in industries such as finance and insurance lead one to believe that some potential for success exists for the recruiting command as well. The middle ground between large-scale implementation and doing nothing is experimentation. It is the willingness to experiment that has helped the Marine Corps embrace technology advantages on the battlefield, and the same willingness to experiment can help the Corps' recruiting force. General James Jones, 32nd Commandant of the Marine Corps, feels so strongly about the value of experimentation that he has included "Capitalize on innovation, experimentation and technology" as one of the six fundamentals of the Marine Corps' Strategy 21, a vision of the focus of strategy and policy for the Marine Corps of the 21st Century. In keeping with the Commandant's guidance, a pilot program to experiment with and evaluate the applicability of a customized CRM solution for recruiting would be a worthy endeavor.

3. Further Research

Exploring the application of information technology to recruiting presented a variety of potential topics beyond the scope of this thesis. However, many topics offer

opportunities for future research. These topics include systems that are applicable to each level of the recruiting force command structure.

Broadening the scope of this thesis, recruiters and their supervisors could benefit from research into the integration of a Personal Digital Assistant (PDA) based Scheduling and Results book, automated working file, and automated enlistment package that facilitate the free flow of applicant information across various hardware platforms. Such an integrated solution could further reduce redundant data entry and administrative overhead.

The Recruiting Station and District levels would benefit from research into an automated waiver request system. Providing recruiting station personnel with a simple, fast and accurate way to compile and transmit waiver requests and associated documentation throughout the chain of command could speed the waiver request decision and decrease the current costs of information transfer.

At the Recruiting Command (national level) research into the advantages of data warehousing and mining tools may uncover matters of interest for the benefits of future recruiting efforts. Additionally, research into the contracting and management of a variety of mobile wireless information technology tools may assist MCRC in gaining economies of scale in the purchasing and maintenance of such assets.

4. Lessons Learned

The present study has led to several conclusions regarding the components, processes, and architectures of information flow in recruiting. First, the patient examination of a process, its components, and their inputs and outputs requires time and effort. Repeated examination and consideration of the components of the recruiting business model yielded differing perspectives. Approaching the components in different ways broadened the associated understanding of the factors involved. This was most evident when comparing an officer's perspective (former recruiting station executive officer), a senior career recruiter's perspective (former NCOIC, Recruiter Instructor and Operations Chief), and a junior recruiter's perspective (less than 18 months on duty). Taking the time to assess the components from each of these perspectives provided a well-rounded and balanced view that would not have otherwise been possible.

The second conclusion drawn is the value of producing a simple, reliable tool, that works the first time, and every time thereafter. Discussions with recruiters of all Services included comments regarding the promises of efficiency and improvement to be brought about by technology. While students in an academic environment have considerable resources at their disposal (hardware, software, bandwidth, and time), recruiters are limited in equipment, funds, technical support, and time. Systems or applications not thoroughly tested and proven to deliver the requirements identified by the end-user will be cast aside with little consideration and no opportunity for forgiveness.

The AEP and simple spreadsheets used to calculate and reconcile prospecting are examples of systems likely to gain acceptance. JRISS is an example of one that has been rejected. If Information Technology directors hope implement systems and reap the potential productivity benefits, they must keep availability, reliability, and ease of use in the forefront of their decision making process.

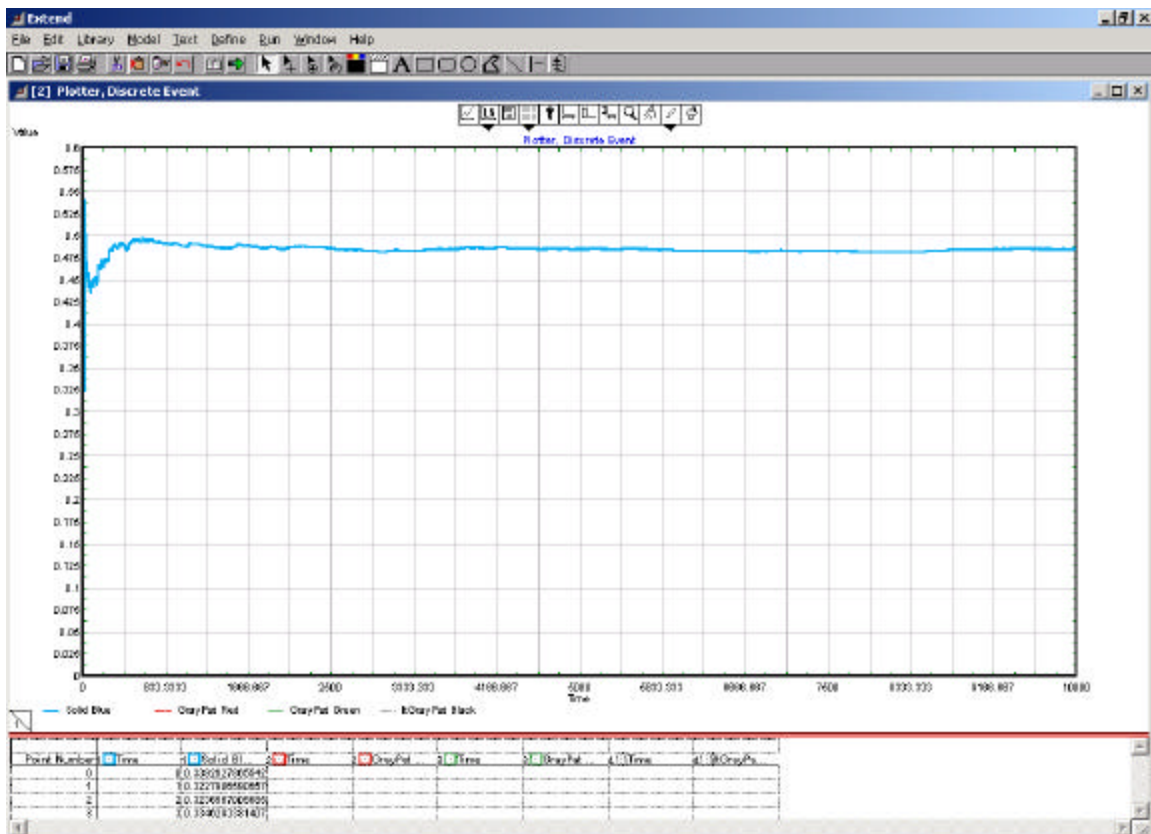
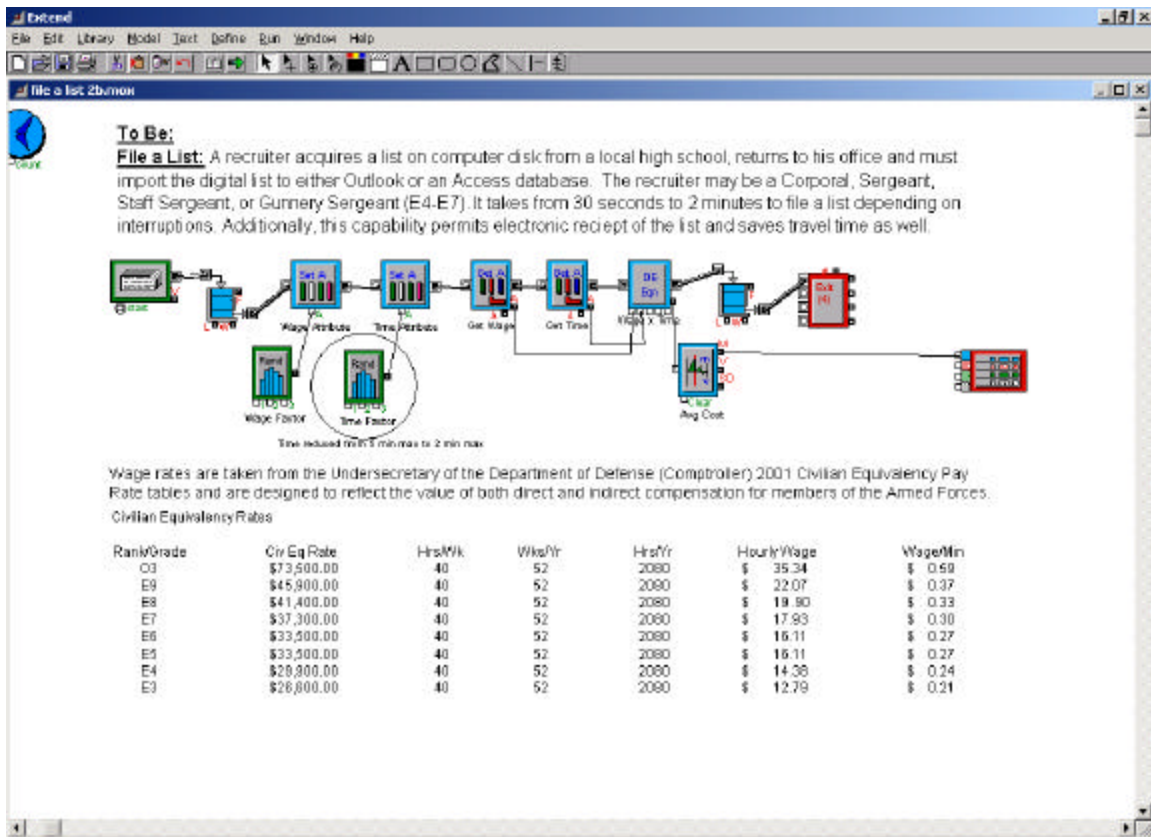
Finally, that diligence and perseverance in the face of adversity pay off. It has done so time and time again for combat Marines on battlefields worldwide, and continues today in high schools and homes across the nation for Marine recruiters. Perhaps more than anything else, the detailed and repeated examination and consideration of the mission accomplished by the Marine Corps Recruiting Force left the author in awe of the potential of a well-led, focused, and disciplined team of Marines.

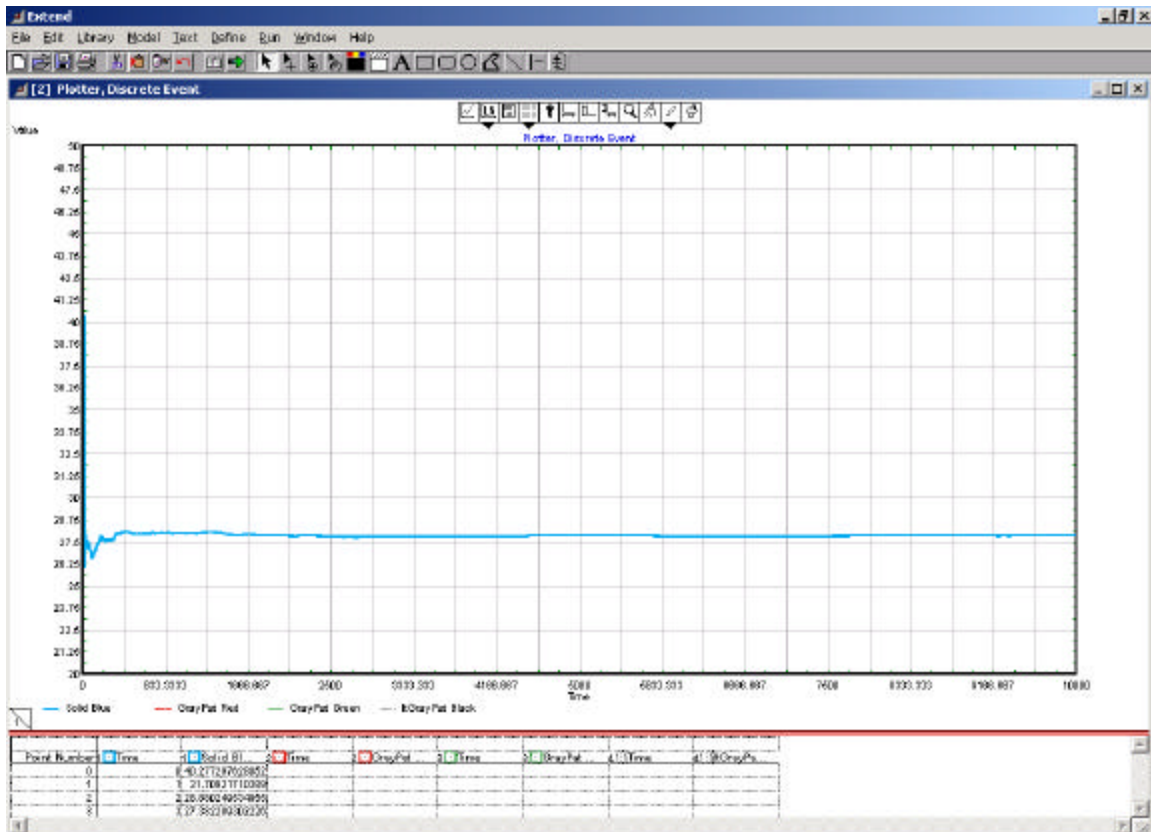
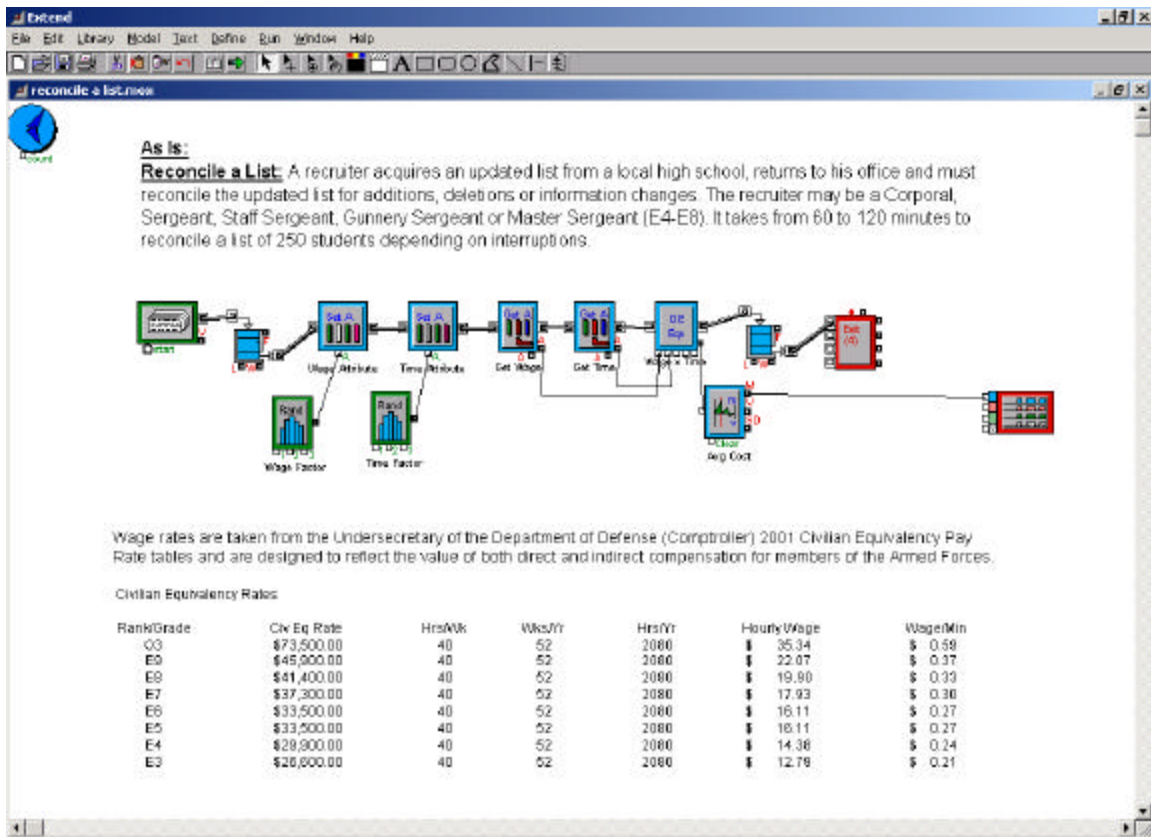
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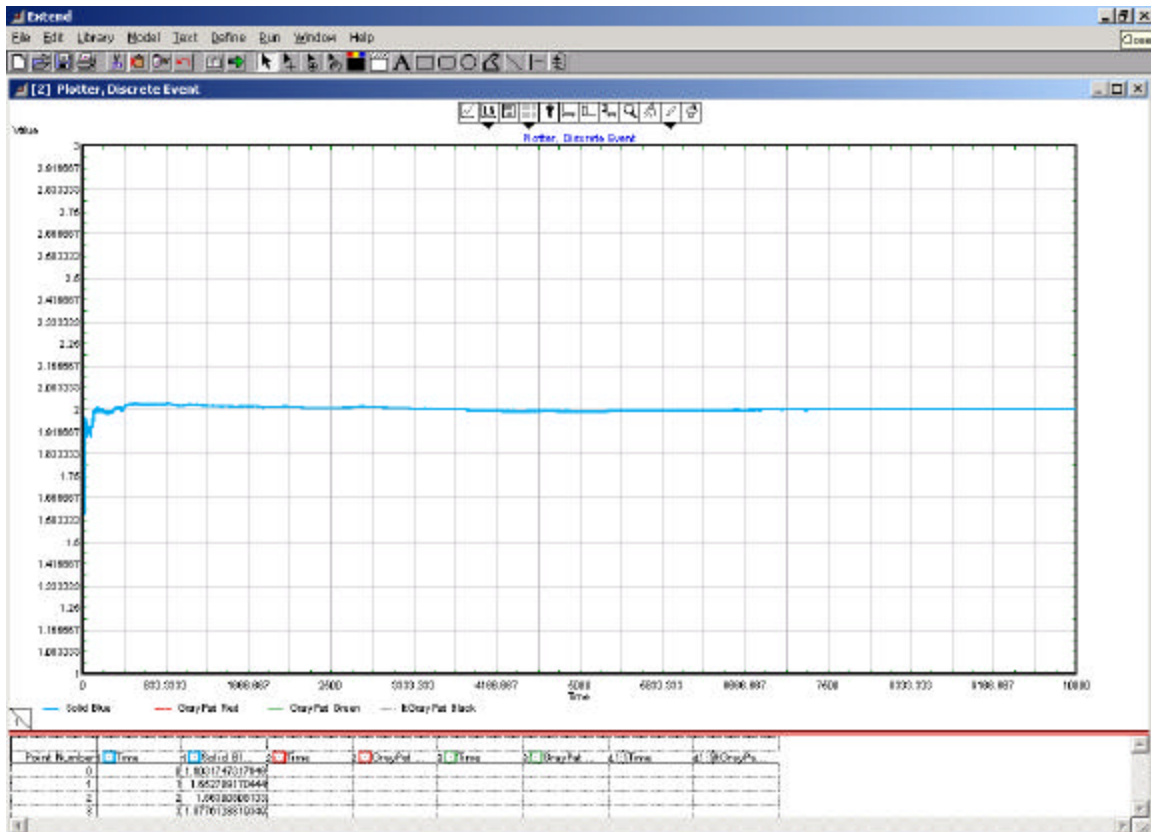
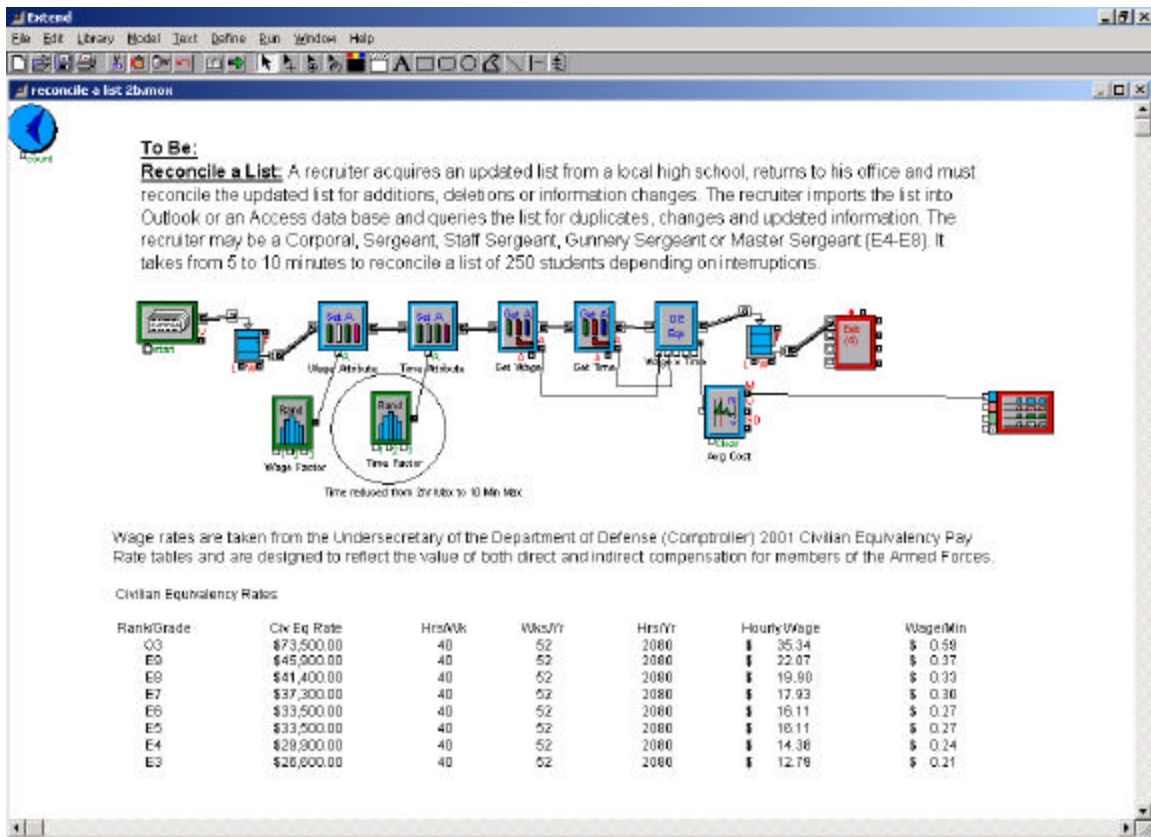
APPENDIX A. EXTEND™ MODELS AND OUTPUT GRAPHS

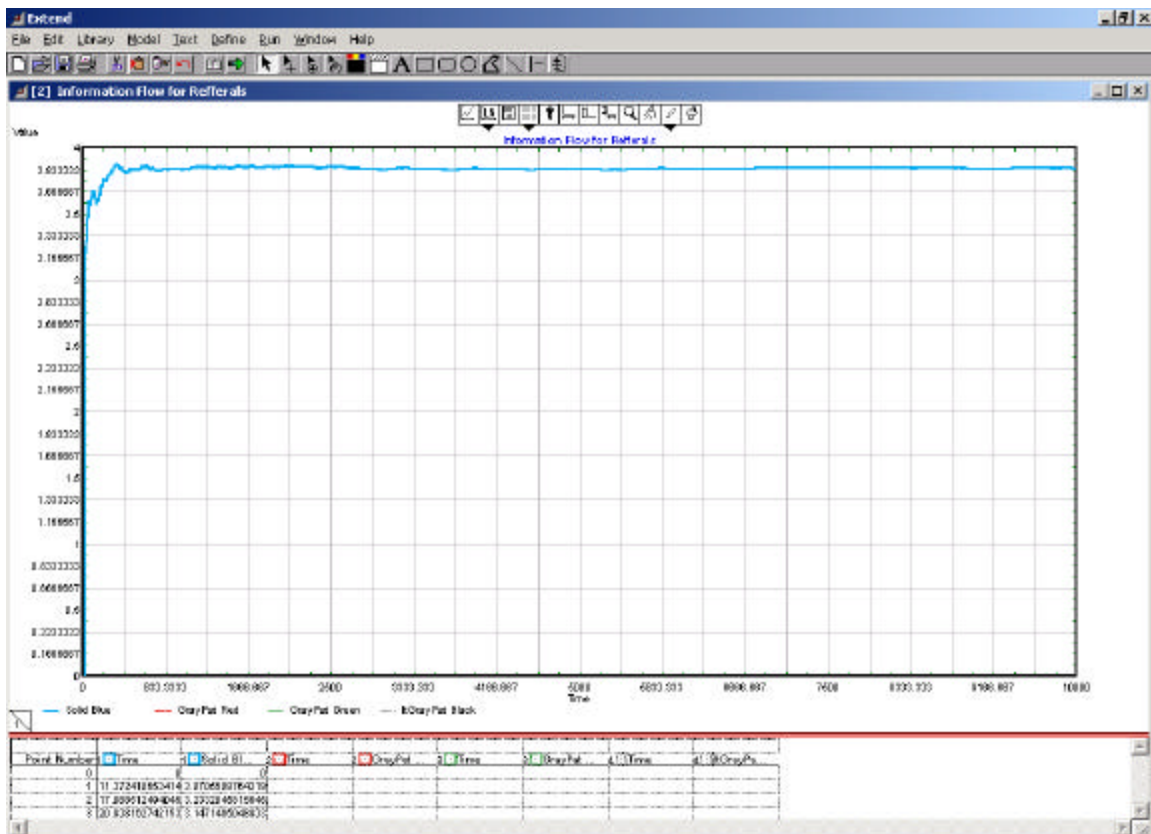
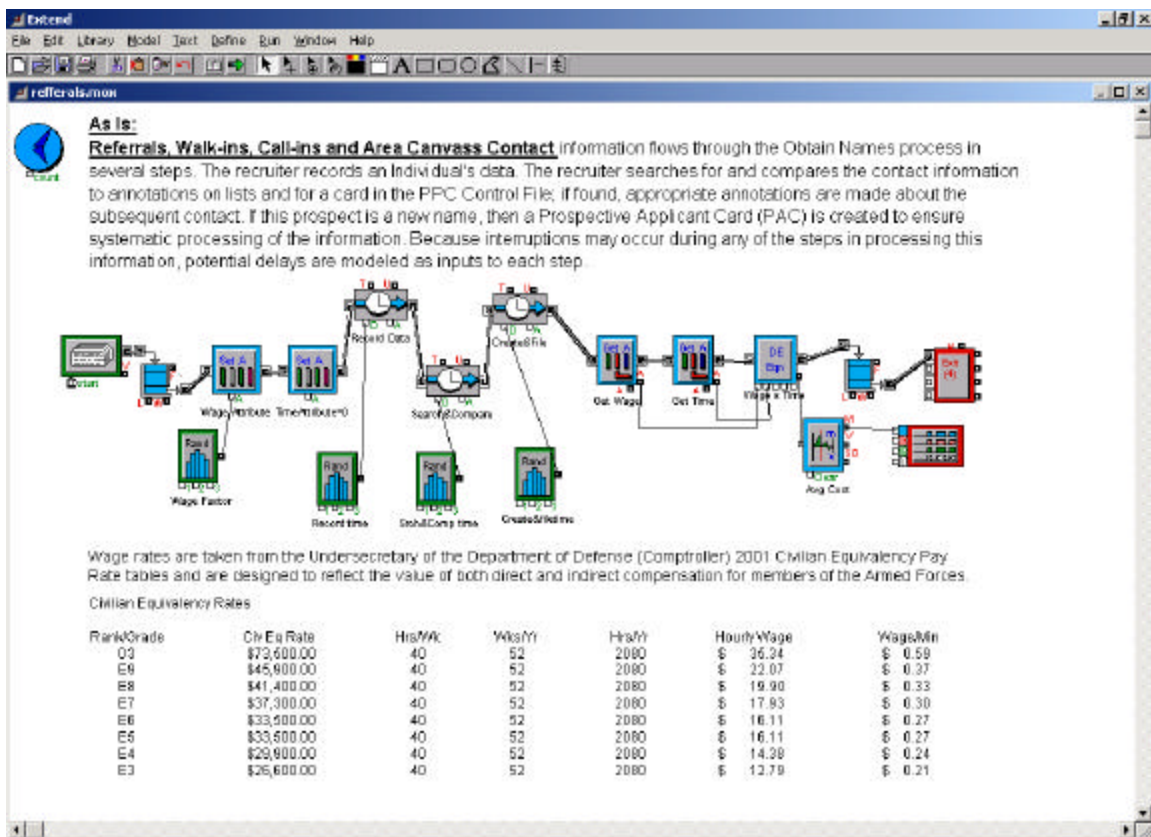
Appendix A contains screen captures of the Extend™ models employed to calculate the cost-per-task for the various information flow tasks examined during the thesis process. The appendix is organized by information flow task, with "As Is" models first and "To Be" second. By comparing the output graphs presented below each model, one can compare the "As Is" and "To Be" costs per task.

Model Number	Model Name	Page Number
1	File a List- "As Is"	A-2
2	File a List- "To Be"	A-3
3	Reconcile a List- "As Is"	A-4
4	Reconcile a List- "To Be"	A-5
5	Handle Referrals, Walk-ins, Call-ins & AC Contacts- "As Is"	A-6
6	Handle Referrals, Walk-ins, Call-ins & AC Contacts- "To Be"	A-7
7	Identify, Sort & Distribute Cards from the working file - "As Is"	A-8
8	Identify, Sort & Distribute Cards from the working file - "To Be"	A-9
9	Receive Cards From the Working File, Organize and Schedule Prospecting- "As Is"	A-10
10	Receive Cards From the Working File, Organize and Schedule Prospecting- "To Be"	A-11
11	Read and Dial Telephone Number, Make Appropriate Annotations to List, PAC and S&R Sheet- "As Is"	A-12
12	Read and Dial Telephone Number, Make Appropriate Annotations to List, PAC and S&R Sheet- "To Be"	A-13
13	Create a new PAC after Area Canvass or Home Visit- "As Is"	A-14
14	Create a new PAC after Area Canvass or Home Visit- "To Be"	A-15
15	Tabulate and Reconcile Prospecting Objectives Against Prospecting Results- "As Is"	A-16
16	Tabulate and Reconcile Prospecting Objectives Against Prospecting Results- "To Be"	A-17
17	Make Appropriate Annotations to PAC as Result of Screening- "As Is"	A-18
18	Make Appropriate Annotations to PAC as Result of Screening- "To Be"	A-19
19	Create the Enlistment Package- "As Is"	A-20
20	Create the Enlistment Package- "To Be"	A-21

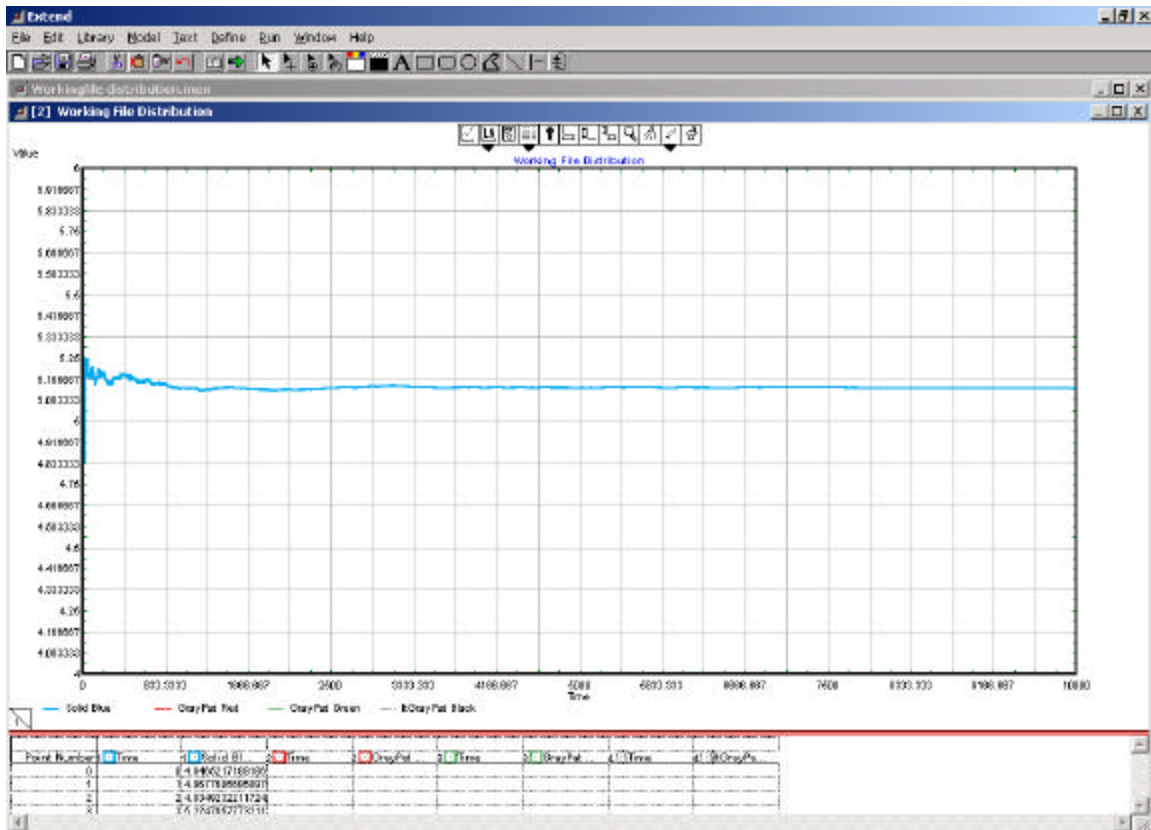
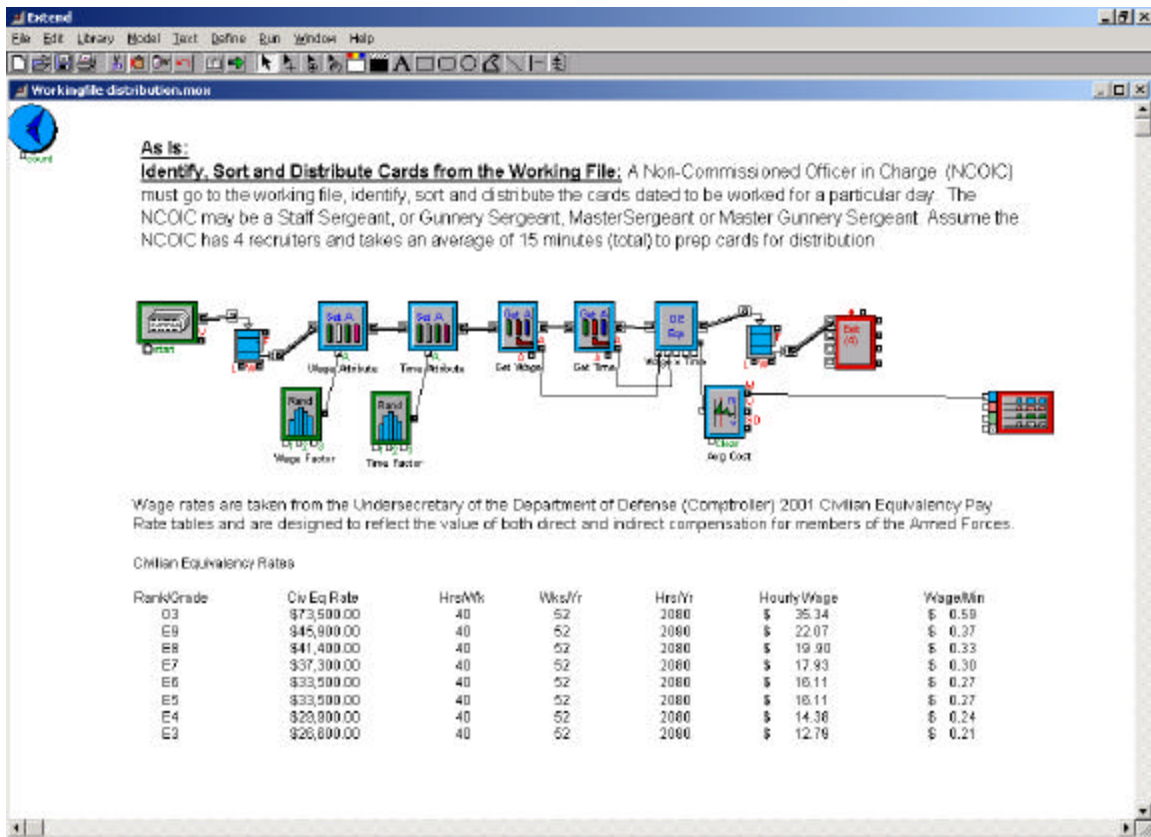


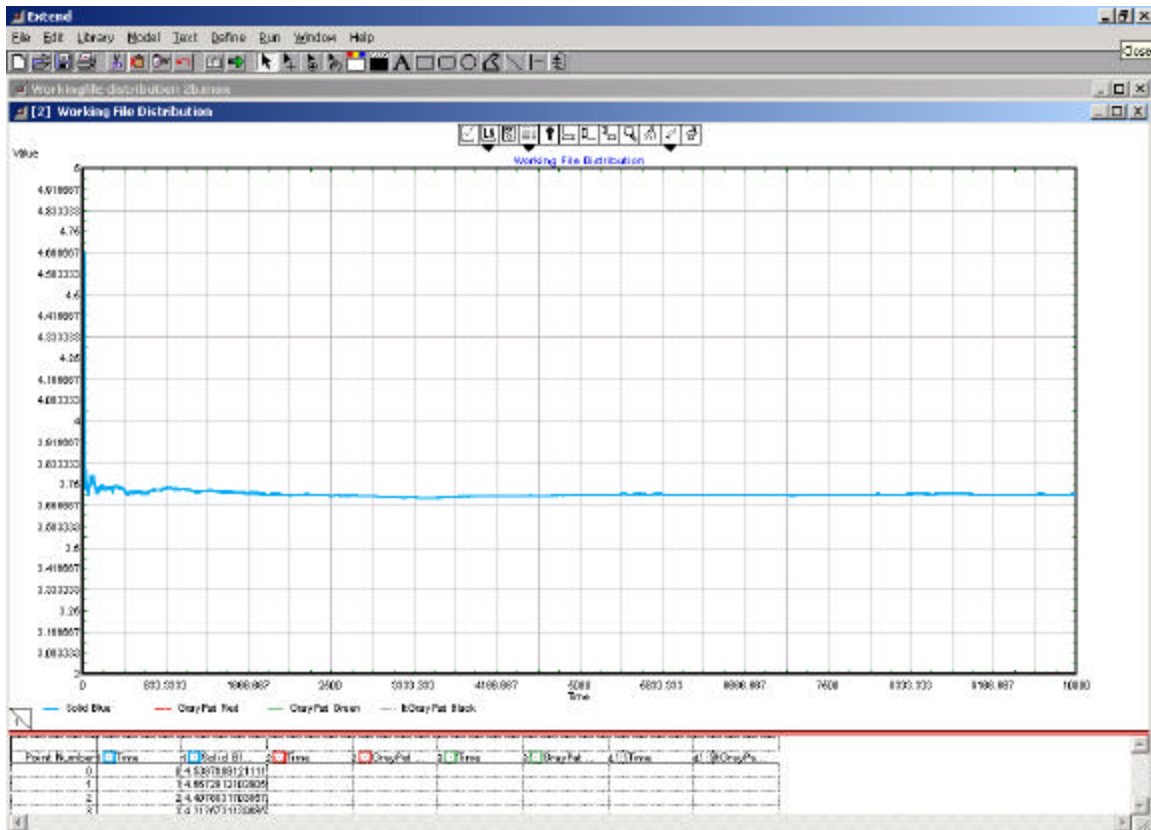
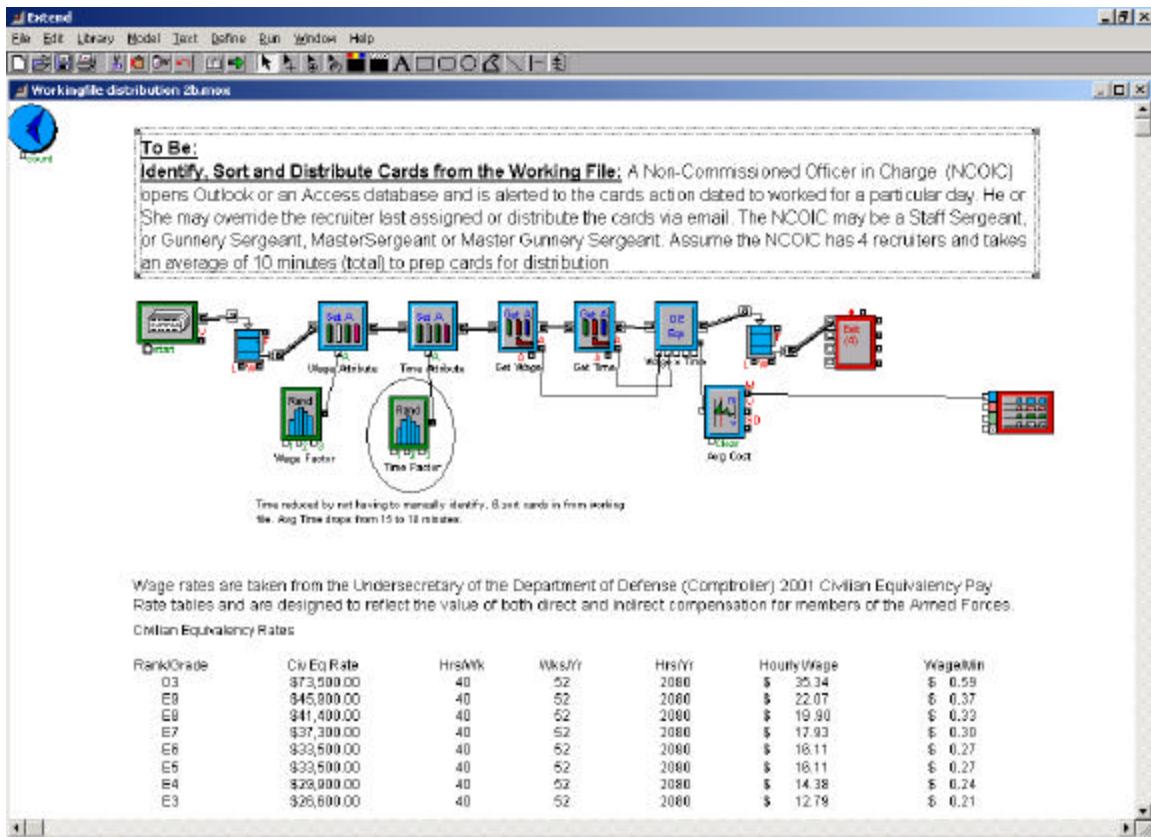


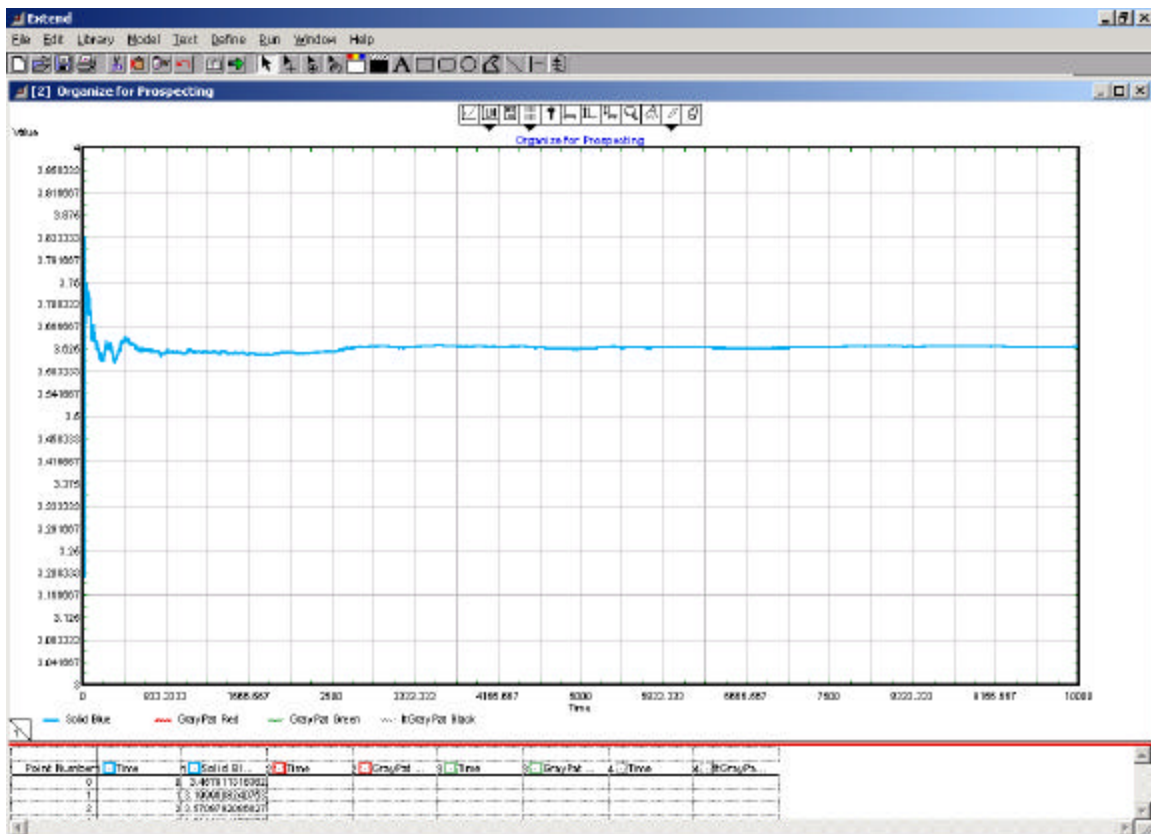
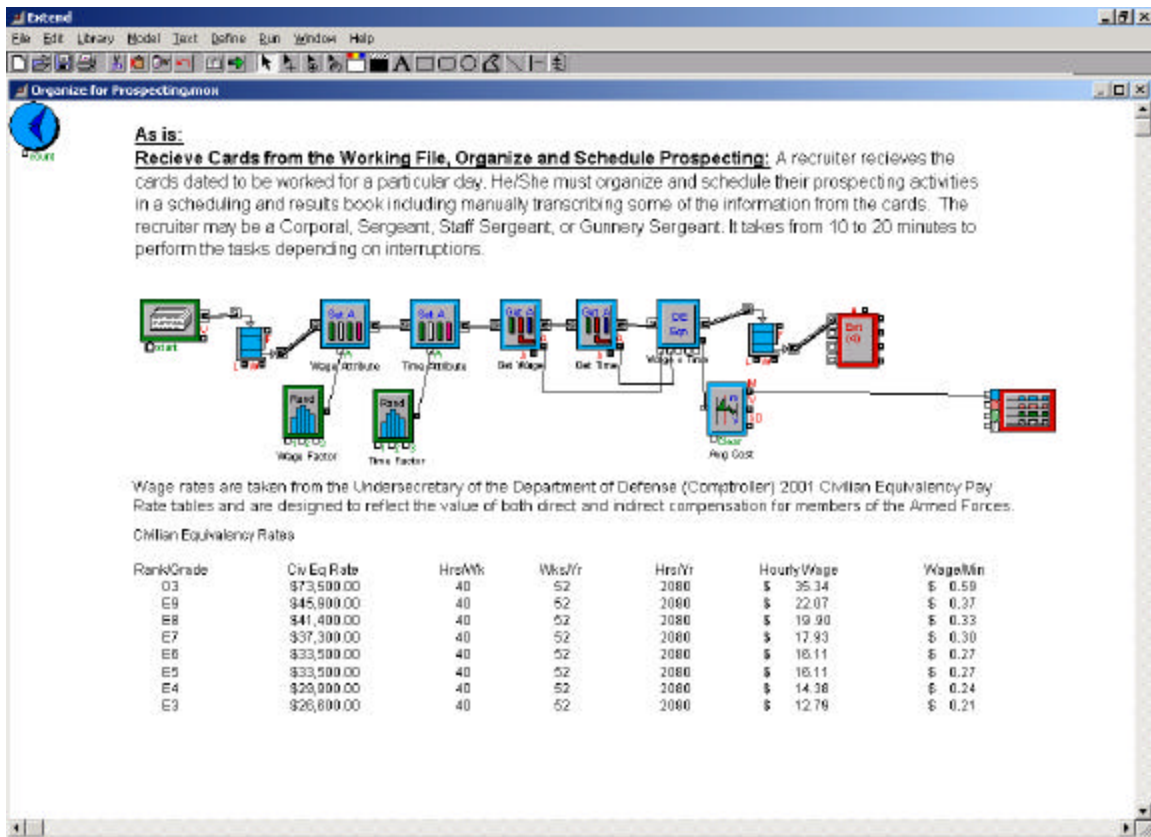








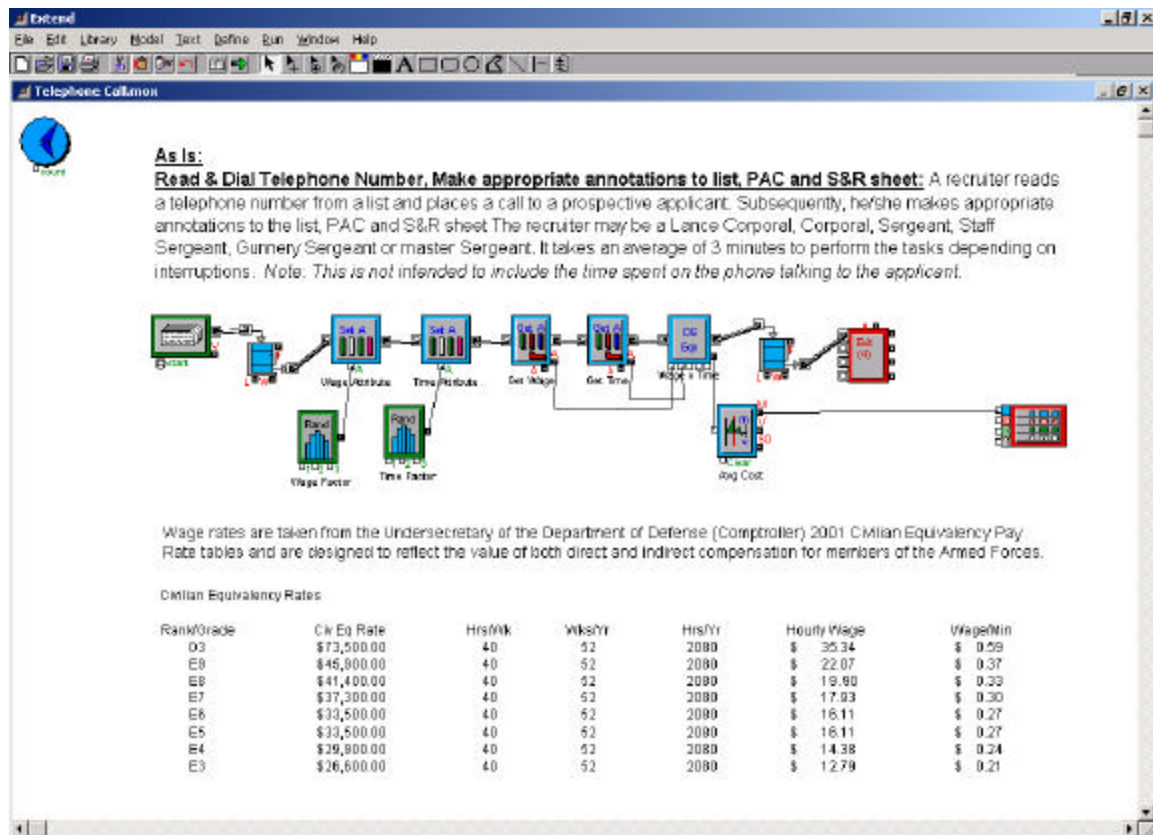


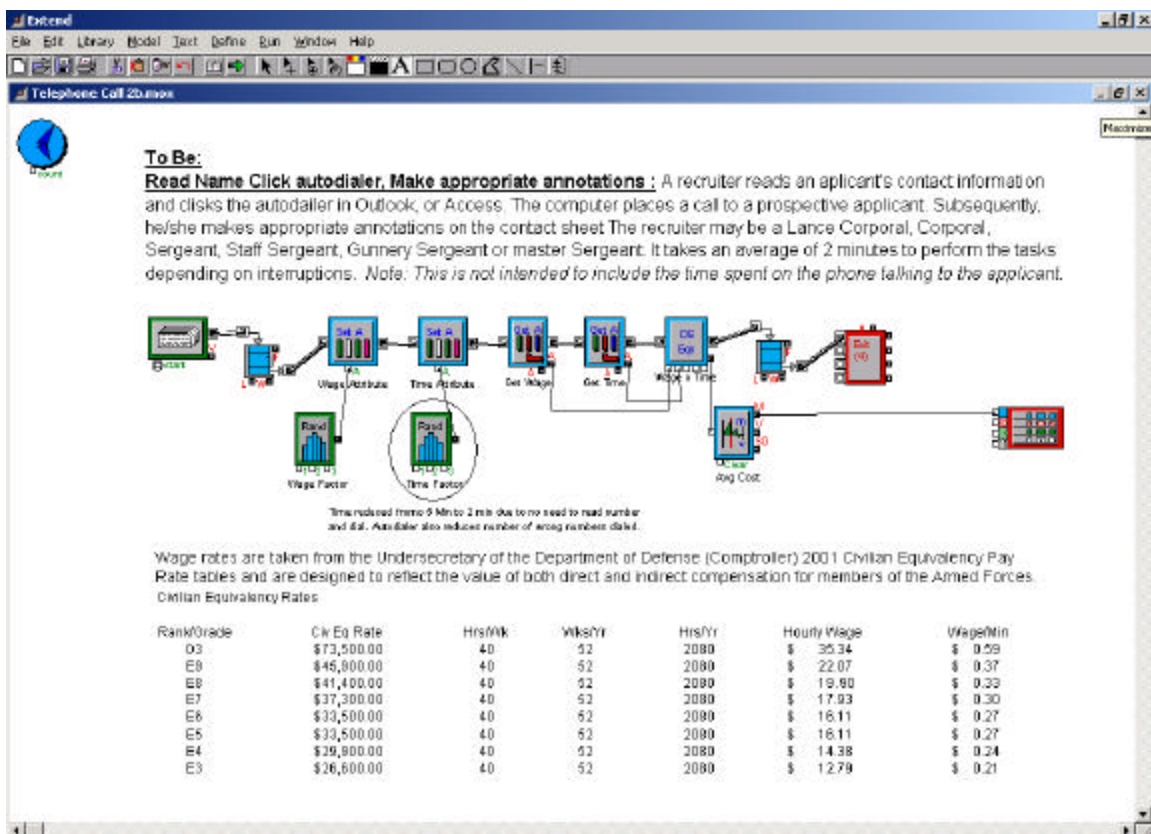
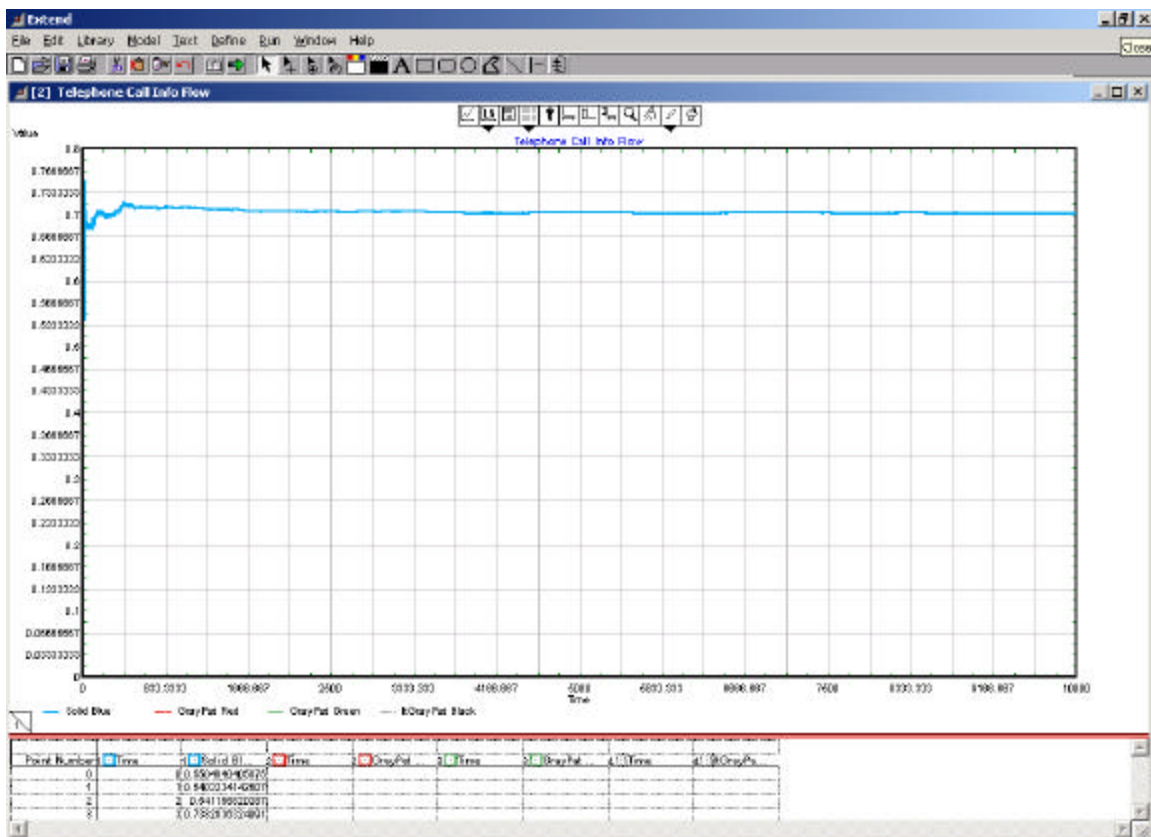


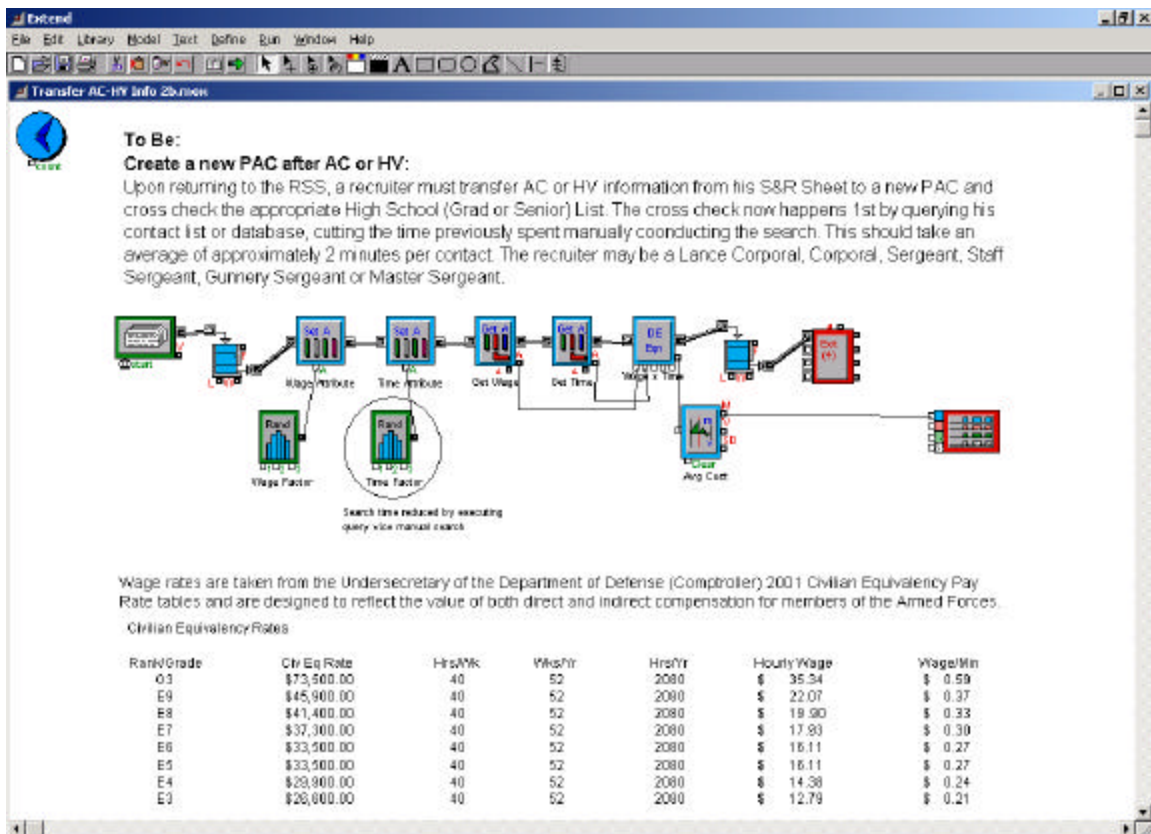
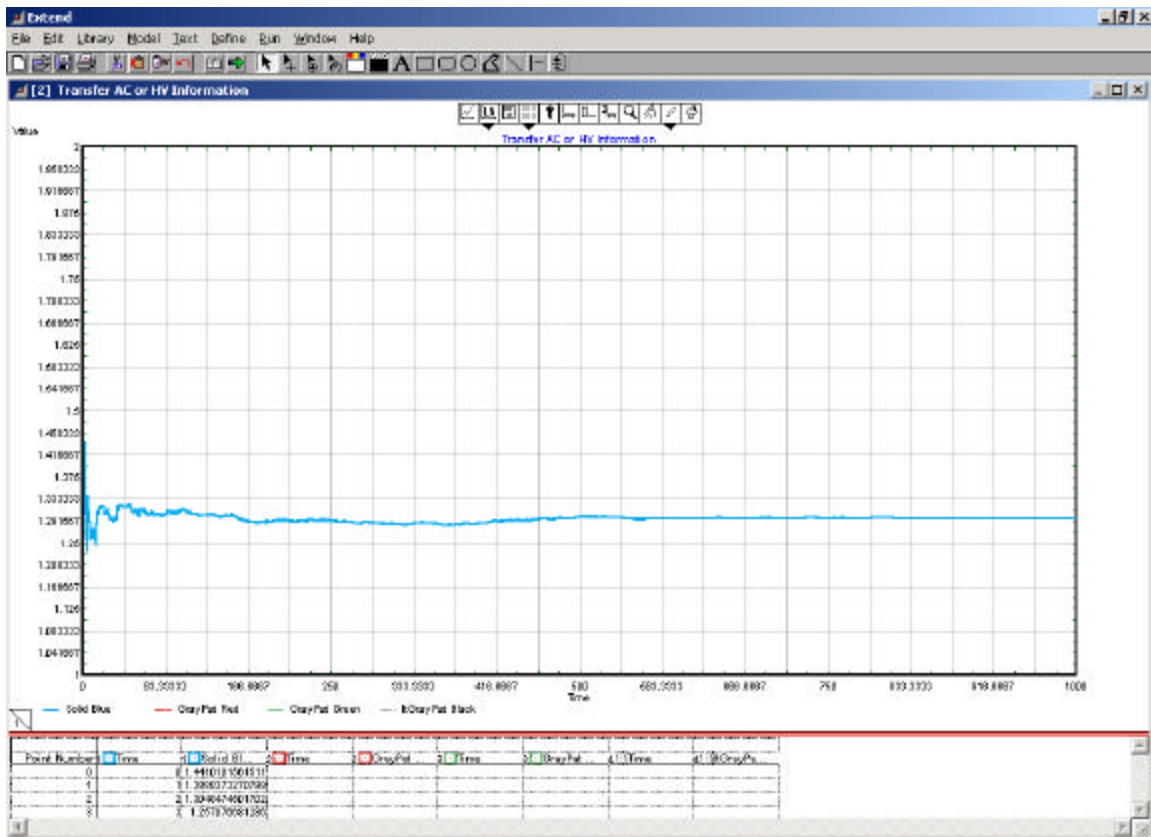
To Be: Receive Cards from NCOIC and Organize for Prospecting.

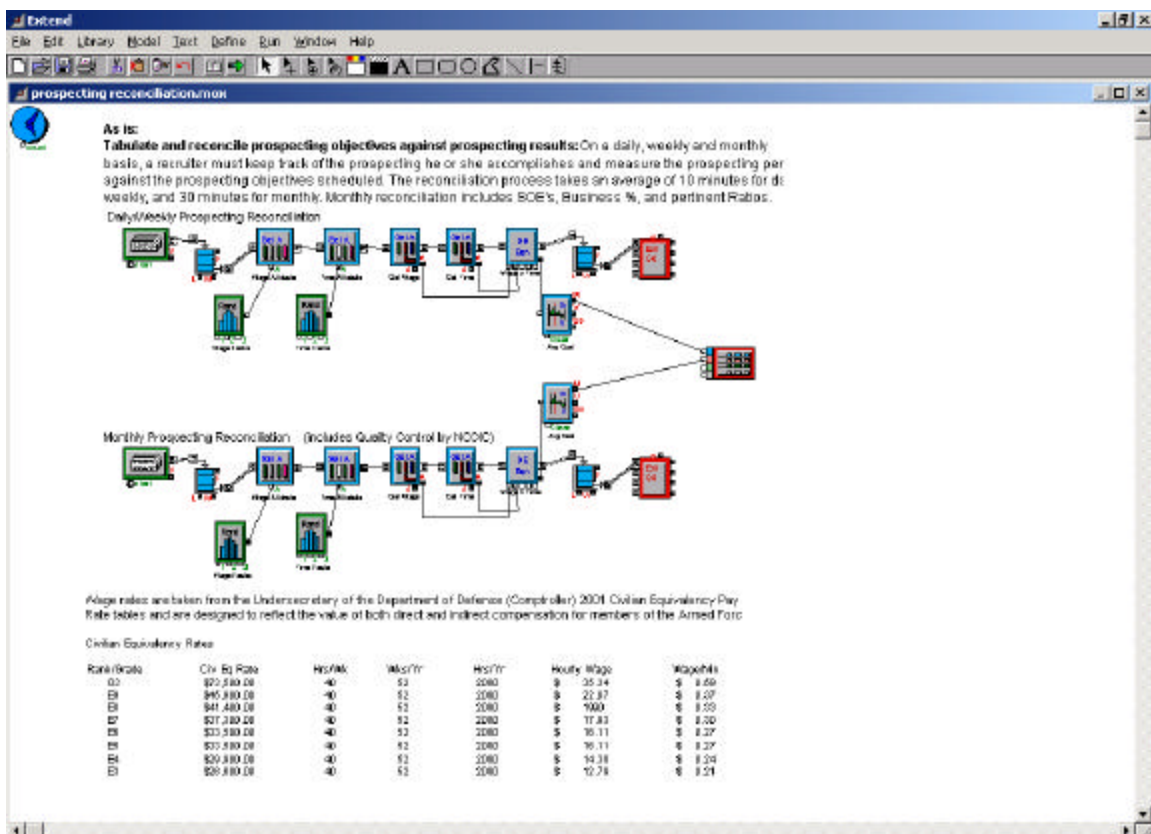
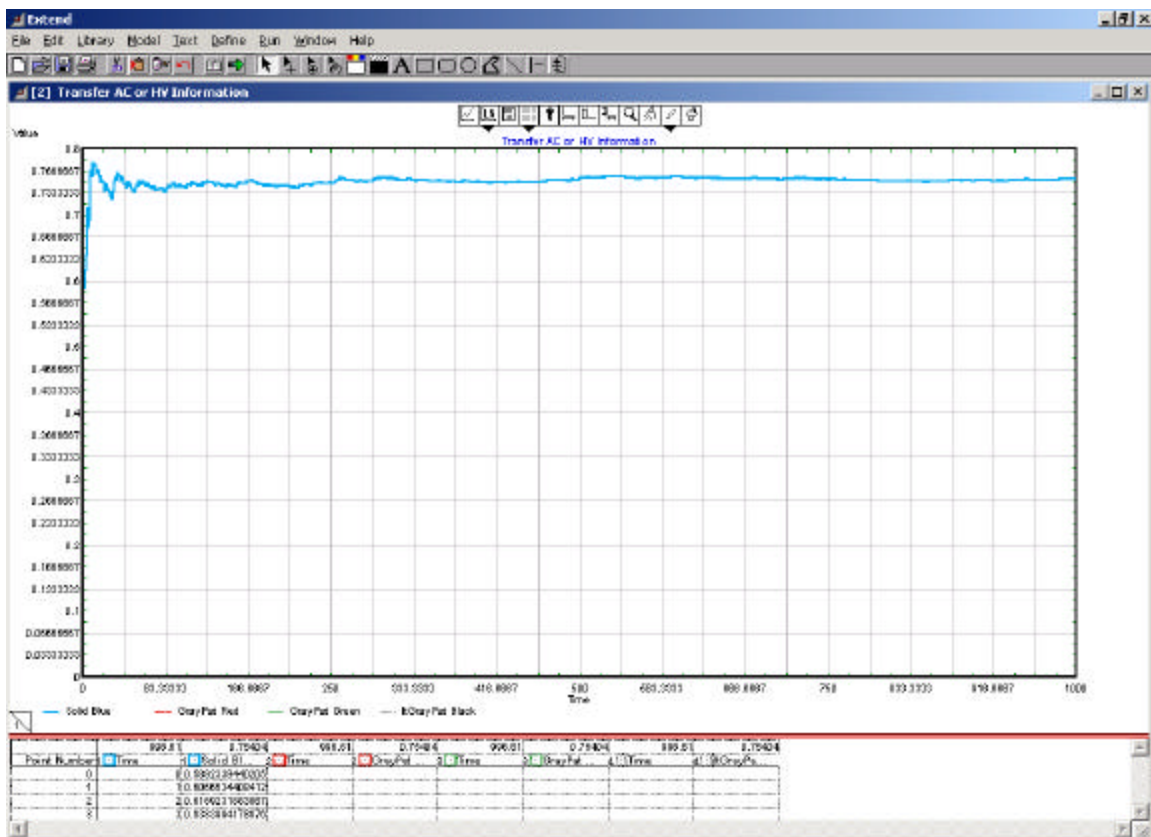
Little to no change, as there is no way to get the distributed cards or contact information into the S&R Book without either printing them out and adding them, or transcribing data that would have been transcribed under the As is method. Either alternative yields efficiency.

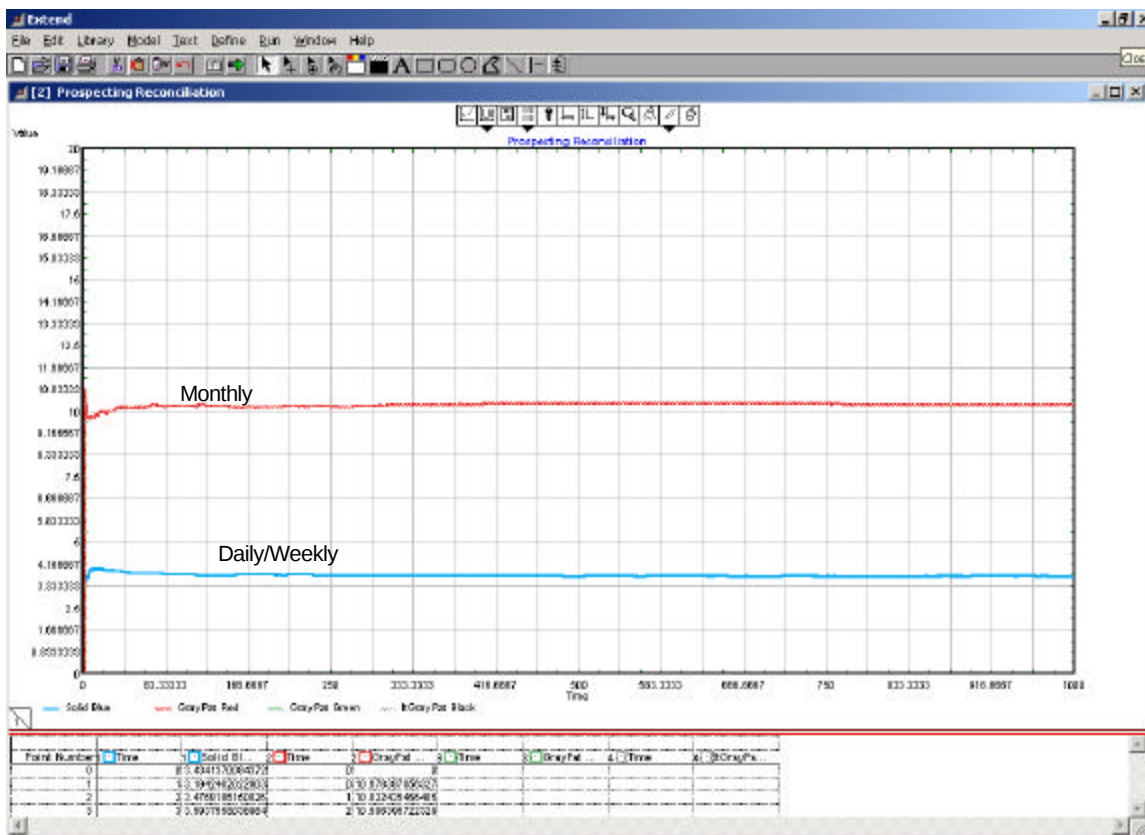
It is beyond the scope of this thesis, but the productivity returned from employing a Palm based S&R book would permit a seamless integration of distributed contact information. A Recruiter could simply access the downloaded contact information and annotate a schedule with a few taps of a stylus.











To Be:
Tabulate and reconcile prospecting objectives against prospecting results: On a daily basis, a recruiter must keep track of the prospecting he or she accomplishes and measure the prospecting performed against the prospecting objectives scheduled. By inputting these numbers to a MS Excel spreadsheet rather than hand calculating on paper, weekly and monthly numbers are automatically calculated. This removes the monthly tabulation process and executes reconciliation with far greater accuracy. The reconciliation process takes an average of 5 minutes. Monthly reconciliation including SOE's, Business %, and pertinent Ratios is no longer a separate task.

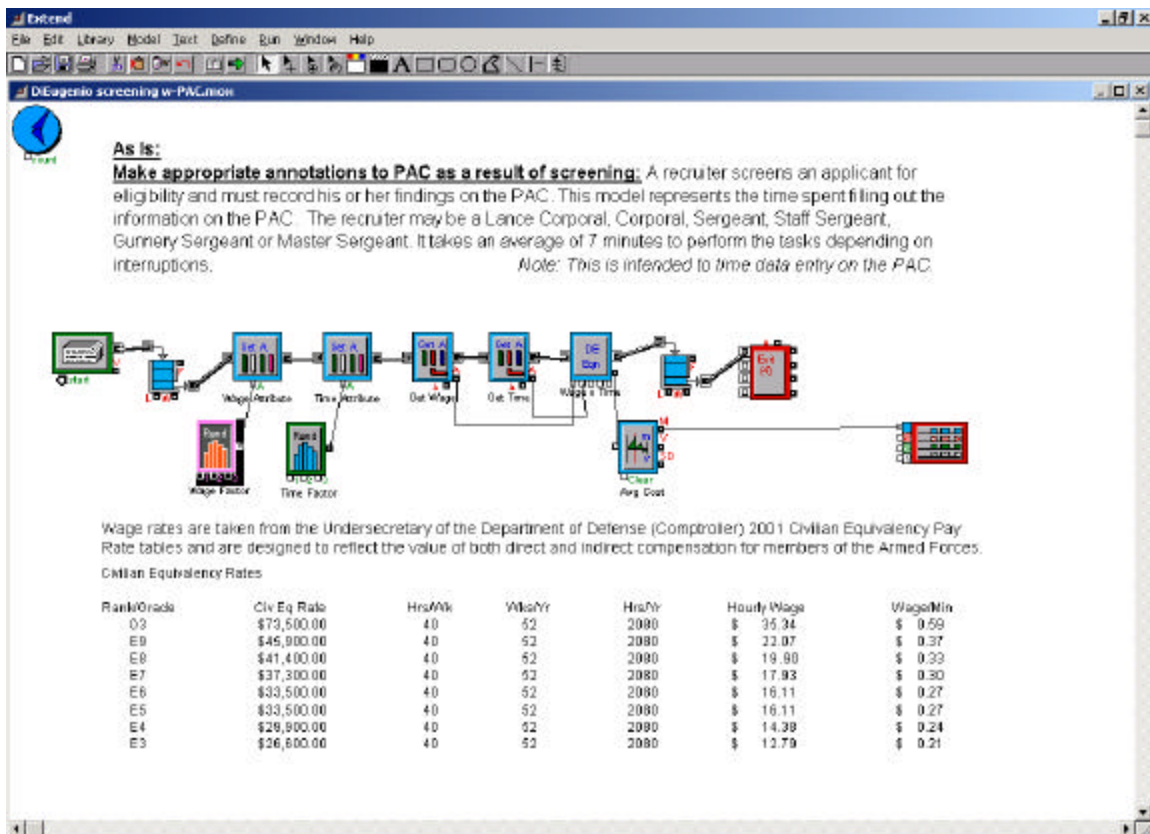
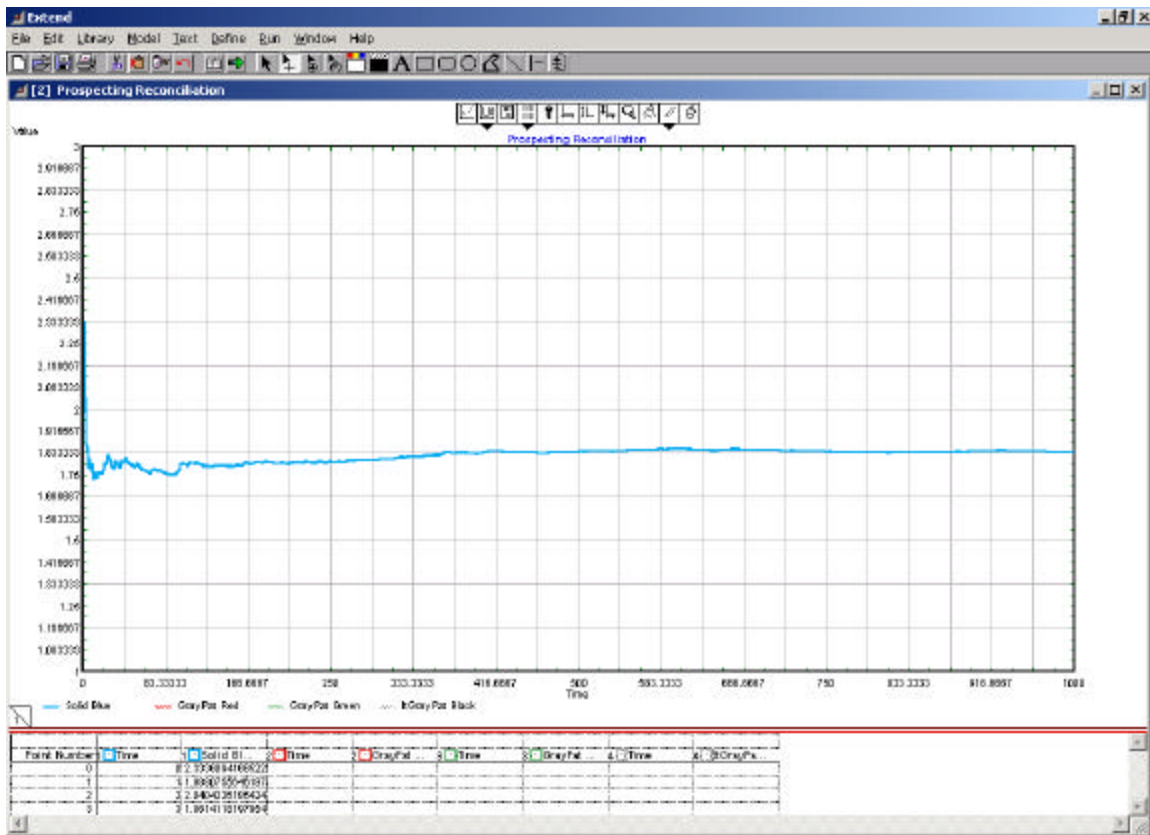
Prospecting Reconciliation

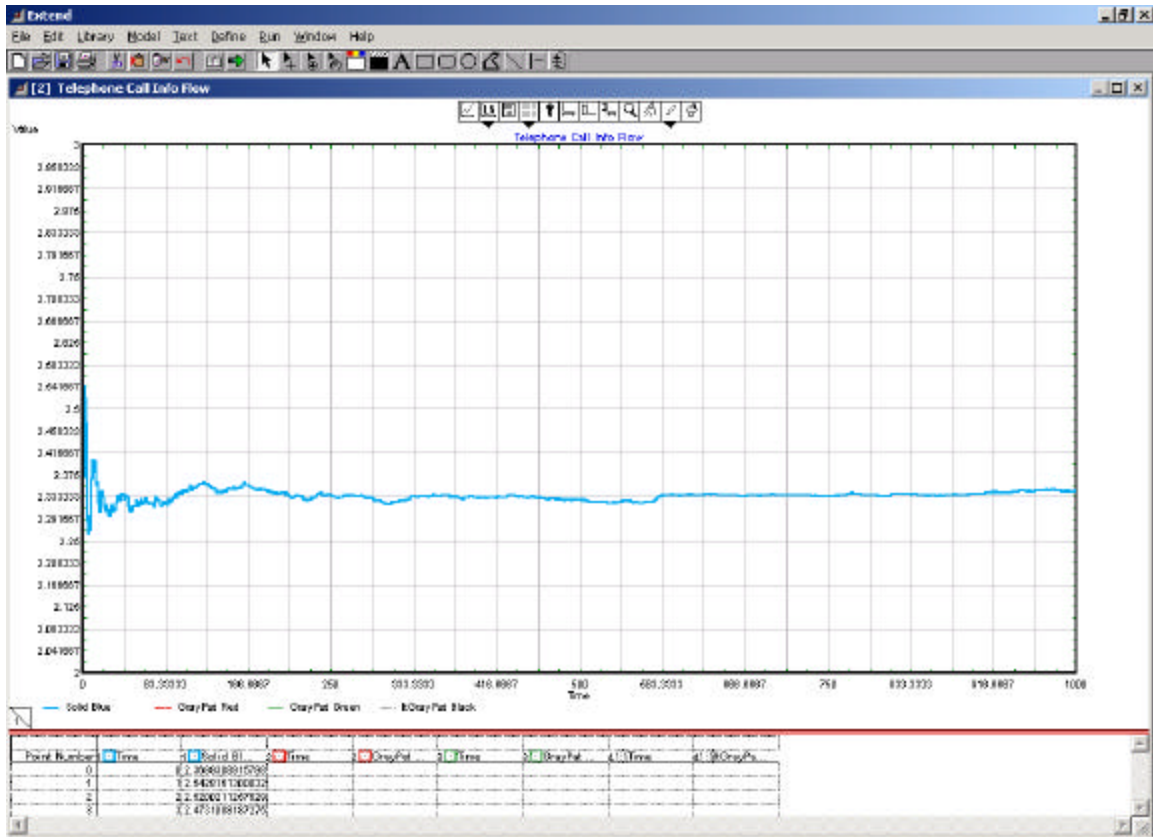
Data Input Only: No Calculations required.
Time reduced to 5 minutes

Wage rates are taken from the Undersecretary of the Department of Defense (Comptroller) 2001 Civilian Equivalency Pay Rate tables and are designed to reflect the value of both direct and indirect compensation for members of the Armed Forces.

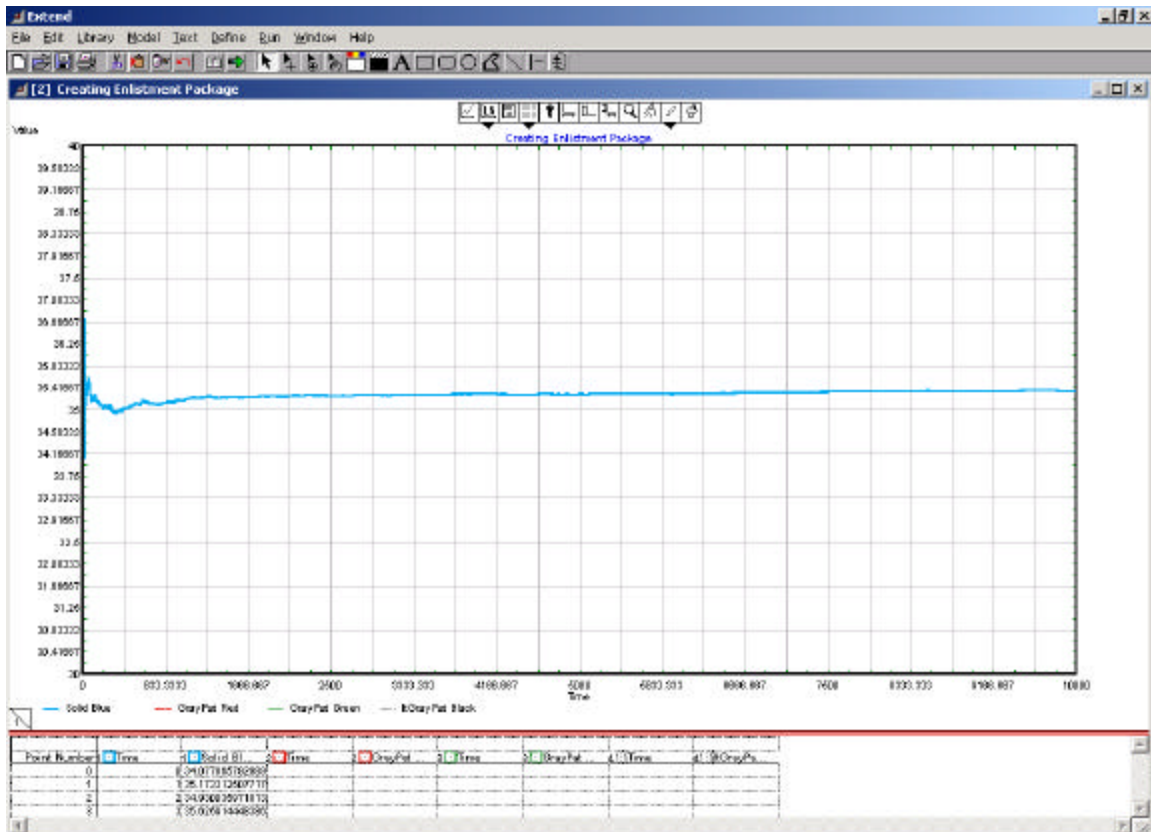
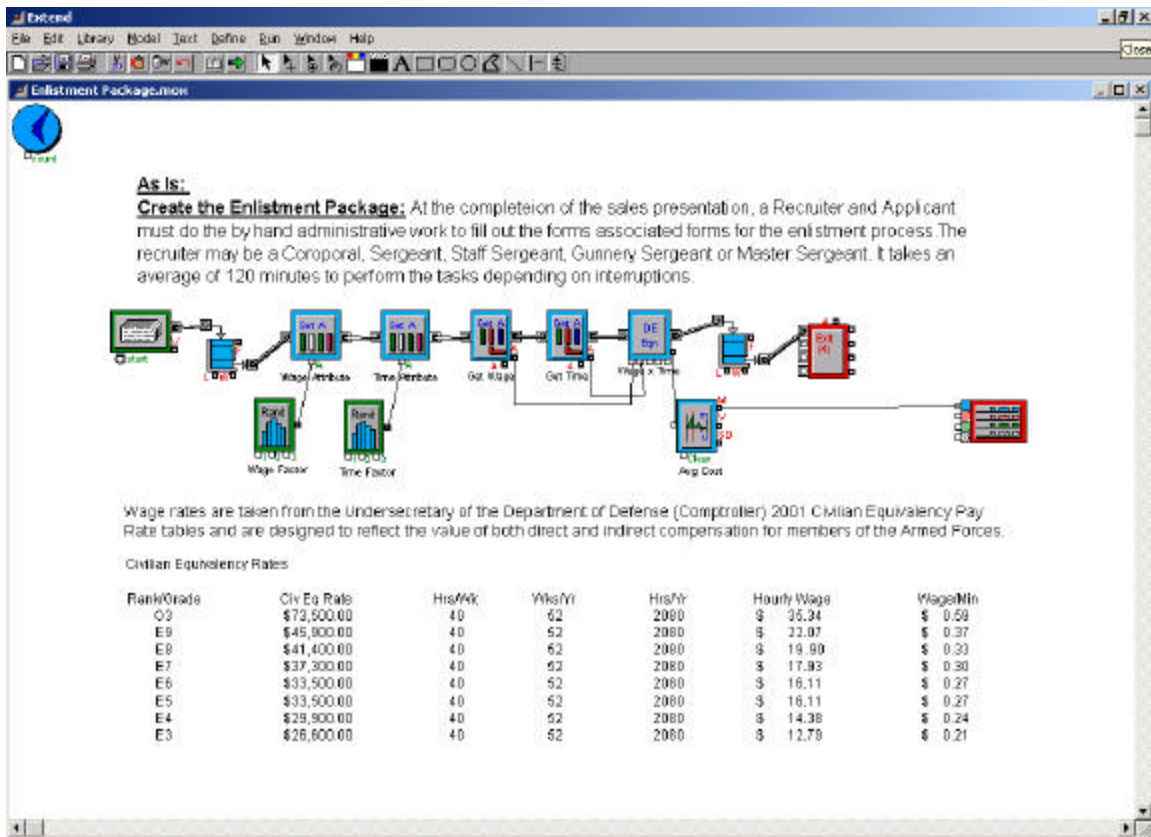
Civilian Equivalency Rates

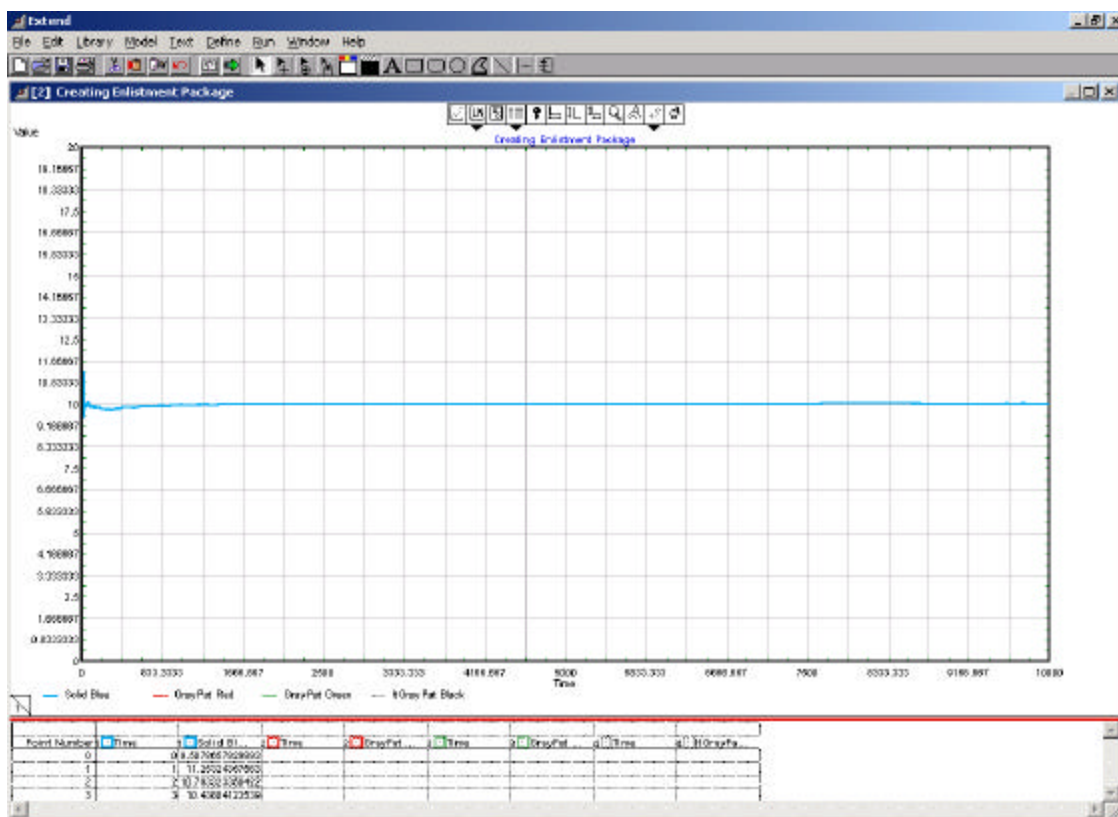
Rank/Grade	Civ Eq Rate	Hrs/Mk	Wks/Yr	Hrs/Yr	Hourly Wage	Wage/Hr
O3	\$73,500.00	40	52	2080	\$ 35.34	\$ 0.59
E9	\$45,900.00	40	52	2080	\$ 22.07	\$ 0.37
E8	\$41,400.00	40	52	2080	\$ 19.90	\$ 0.33
E7	\$37,300.00	40	52	2080	\$ 17.93	\$ 0.30
E6	\$33,500.00	40	52	2080	\$ 16.11	\$ 0.27
E5	\$33,500.00	40	52	2080	\$ 16.11	\$ 0.27
E4	\$29,900.00	40	52	2080	\$ 14.38	\$ 0.24
E3	\$26,900.00	40	52	2080	\$ 12.79	\$ 0.21





There is little perceived difference by employing a productivity tool to record the same information by typing that could be recorded by writing. While once recorded, it may later be used more effectively than by manual methods, the simple information flow associated with screening via PAC is no more efficient when employing the productivity tool.





APPENDIX B. NET PRESENT VALUE AND PAYBACK ANALYSIS

The Automated Enlistment Package (AEP) is intended to reduce the amount of time required to complete an enlistment application from an average of 2 hours to an average of 30 minutes. In order to consider the value of the development of such an application, the spreadsheet below considers the associated costs over the expected 5 year life cycle against the potential savings in direct labor. While the savings will not directly be reflected in a reduced budget, the intent is to demonstrate the savings and suggest that they may be reflected in additional productive time for the recruiter. A recruiter who creates 36 enlistment packages in a year saves 54 hours. This productive time may translate into new contracts, better contact with poolees and therefore reduced Delayed Entry Program attrition, or better quality of life.

AEP COSTS

Labor Costs =	Savings of (As Is Cost - To Be Cost.) Assumes a 4% increase per year in the cost of direct labor.	
Development Costs	\$ 70,000.00	One time Fixed
Training Costs	\$ 90,021.82	All recruiters in Yr 0, then 25% of recruiters each year to cover turnover and refresher
Maint. Costs	\$ 83,396.00	Average \$20K per year
Total Cost	\$ 243,417.82	

As Is Vs. To Be Labor

Direct Labor:	Cost per iteration from Extend Model	Iterations per year	Cost per year	
As Is	\$ 35.36	53760	\$ 1,900,953.60	
To Be	\$ 10.03	53760	\$ 539,212.80	
			\$ 1,361,740.80	=72% Savings

BALANCE SHEET

Cashflow data	Labor Cost		Maintenance Costs		Training Costs	
	Savings in Direct Labor Costs. Assume Pay Increases by 4%/Yr		Maintenance Average of \$20K/Yr		Initial training 1hr for all recruiters. Followed by 25%/Yr. Turnover & Refresher	
		Discount to Now		Discount to Now		Discount to Now
Yr 0			\$ 20,000.00	\$ 20,000.00	\$ 48,118.00	\$ 48,118.00
Yr 1	\$ 1,361,740.80	\$ 1,249,688.13	\$ 20,000.00	\$ 18,182.00	\$ 12,510.68	\$ 11,373.46
Yr 2	\$ 1,416,210.43	\$ 1,171,772.51	\$ 20,000.00	\$ 16,528.00	\$ 13,011.11	\$ 10,752.38
Yr 3	\$ 1,472,858.85	\$ 1,106,558.85	\$ 20,000.00	\$ 15,026.00	\$ 13,531.55	\$ 10,166.25
Yr 4	\$ 1,531,773.20	\$ 1,046,201.10	\$ 20,000.00	\$ 13,660.00	\$ 14,072.81	\$ 9,611.73
		\$ 4,574,220.60		\$ 83,396.00		\$ 90,021.82
	Yr 0	Yr 1	Yr 2	Yr 3	Yr 4	Totals
Outlay						
Development	\$ (70,000.00)					\$ (70,000.00)
Training	\$ (48,118.00)	\$ (11,373.46)	\$ (10,166.25)	\$ (10,752.38)	\$ (9,611.73)	\$ (90,021.82)
Maint	\$ (20,000.00)	\$ (18,182.00)	\$ (16,528.00)	\$ (15,026.00)	\$ (13,660.00)	\$ (83,396.00)
Savings: As Is - To Be		\$ 1,249,688.13	\$ 1,171,772.51	\$ 1,106,558.85	\$ 1,046,201.10	\$ 4,574,220.60
Net	\$ (138,118.00)	\$ 1,220,132.67	\$ 1,145,078.26	\$ 1,080,780.47	\$ 1,022,929.37	\$ 4,330,802.77

Payback Calculation: 1.4

The savings that accrue from the use of this software payback the forecast total expenditure in 1.4 months.

The Automated Enlistment Package (AEP) is intended to reduce the amount of time required to complete an enlistment application from an average of 2 hours to an average of 30 minutes. In order to consider the value of the development of such an application, the spreadsheet below considers the associated costs over the expected 5 year life cycle against the potential savings in direct labor.

Savings of (As Is Cost - To Be Cost.) Assumes a 4% increase per year in the cost of direct labor.

While the savings will not	\$	70,000.00	One time Fixed
Training Costs	\$	90,021.82	All recruiters in Yr 0, then 25% of recruiters each year to cover turnover and refresher
Maint Costs	\$	83,396.00	Average \$20K per year
Total Cost	\$	243,417.82	

Direct Labor:	Cost per iteration from Extend Model	Iterations per year	Cost per year
As Is	\$ 35.36	53760	\$ 1,900,953.60
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Cashflow data	Labor Cost		Maintenance Costs		Training Costs	
	Savings in Direct Labor Costs. Assume Pay Increases by 4%/Yr		Maintenance Average of \$20K/Yr		Initial training 1hr for all recruiters. Followed by 25%/Yr. Turnover & Refresher	
		Discount to Now		Discount to Now		Discount to Now
Yr 0			\$ 20,000.00	\$ 20,000.00	\$ 48,118.00	\$ 48,118.00
Yr 1	\$ 1,361,740.80	\$ 1,249,688.13	\$ 20,000.00	\$ 18,182.00	\$ 12,510.68	\$ 11,373.46
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Yr 3	\$ 1,472,858.85	\$ 1,106,558.85	\$ 20,000.00	\$ 15,026.00	\$ 13,531.55	\$ 10,166.25
Yr 4	\$ 1,531,773.20	<u>\$ 1,046,201.10</u>	\$ 20,000.00	<u>\$ 13,660.00</u>	\$ 14,072.81	<u>\$ 9,611.73</u>
		\$ 4,574,220.60		\$ 83,396.00		\$ 90,021.82
	Yr 0	Yr 1	Yr 2	Yr 3	Yr 4	Totals
Outlay						
Development	\$ (70,000.00)					\$ (70,000.00)
Training	\$ (48,118.00)	\$ (11,373.46)	\$ (10,166.25)	\$ (10,752.38)	\$ (9,611.73)	\$ (90,021.82)
Maint	\$ (20,000.00)	\$ (18,182.00)	\$ (16,528.00)	\$ (15,026.00)	\$ (13,660.00)	\$ (83,396.00)
Savings: As Is - To Be		\$ 1,249,688.13	\$ 1,171,772.51	\$ 1,106,558.85	\$ 1,046,201.10	\$ 4,574,220.60
Net	<u>\$ (138,118.00)</u>	<u>\$ 1,220,132.67</u>	<u>\$ 1,145,078.26</u>	<u>\$ 1,080,780.47</u>	<u>\$ 1,022,929.37</u>	<u>\$ 4,330,802.77</u>

Payback Calculation: 1.4
The savings that accrue from the use of this software payback the forecast total expenditure in 1.4 months.

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